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TROMBIDIOSIS (INFESTATION WITH CHIGGERS)

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DEFINITION

In a recent edition of Dorland's "American Illustrated Medical Dictionary" [a] trombidiosis, or trombidiiasis, has been defined as "infestation with Trombidium (Leptus) irritans." Throughout most of the United States the mite causing the condition is called the "chigger," and in the south the same term has also been applied to the sand flea (Pulex penetrans). Indeed, the same dictionary gives two definitions of the word chigger:

1. The *Sarcopsylla (Dermatophilus, Tunga) penetrans,* a sand flea of tropical regions: it often burrows in the hands and feet, causing great distress, and sometimes having even a fatal result.

2. A harvest mite, *Leptus (Trombicula) irritans,* of the southern United States, which sometimes becomes an annoying semiparasite.

Ewing,[49] of the United States Bureau of Entomology, is perhaps the greatest authority on this subject, and he adheres exclusively to this second definition. He applies the term chigger mites to the acarids of the family Trombidiidae the larvae of which parasitize vertebrates, and he restricts the term chigger to the larval form of a chigger mite. According to Bishop,[47] "a chigger is the first or larval stage of a large red velvet mite which is entirely harmless when mature." In the present paper I shall adhere to the definitions given by Ewing and Bishop.

The literature on this subject, which is voluminous and is largely in French and German, begins in 1789. It has been well summarized, a complete bibliography being given, in an article published by Noxon Toomey,[3] of Saint Louis, in 1921. It is my purpose to bring the review of the literature up to date and add a few of my own observations and comments.

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NOTE: In this paper the superior numbers refer to the bibliography. The superior letters refer to footnotes.

(*a*) Dorland, W. A. N.: The American Illustrated Medical Dictionary, ed. 15, Philadelphia, W. B. Saunders Company, 1929.

DISTRIBUTION

As Toomey stated, "species of the *Trombidiidae* have been reported from almost all the faunal areas of the tropical and temperate zones. They are more of a pest in certain parts of faunal areas than in other parts of the same areas." They have been found in the Alps at an altitude of 2,812 meters,[10] in the Himalayas [33] and in the Andes.[b] They have also been collected in the Netherlands and in other low lying districts. Various species have been reported [33] from nearly all parts of Europe, the British Isles, India, China, Japan, the South Sea Islands, the Philippine Islands, Australia, Egypt, Africa, Madagascar, almost all of South and Central America, Mexico and the United States. In the United States they are common in the southern and central states and have been found as far north as New York, New Jersey, Pennsylvania, Ohio, Iowa, Wisconsin, Minnesota, Massachusetts, Maine, Montana and Wyoming, and they have been known to occur in California.[49] I have observed their common occurrence in southern Michigan, where small lakes abound, in northern Indiana and on the islands and the American and Canadian shores of Lake Erie.

In the northern hemisphere they may be encountered from the latter part of April until the last of October, and in the southern hemisphere they are found from November until March. Some observers have expressed the opinion that they are most numerous, or at least most troublesome, in warm, dry weather,[42] and others have stated that they thrive especially in damp areas.[44] European investigators have found them in flower and vegetable gardens and in meadows,[c] and Fuss found them on fruit trees.[d] They have been observed on a wide variety of vegetation, ranging from grasses to shrubs. It is said that they have a predilection for berry bushes,[e] but I do not feel that this is necessarily true. André [36] agreed, in the main, with Ewing, who stated [4] that they occur only on the ground and not on grasses, shrubs or trees. I feel that they must inhabit grasses and even high shrubs as well as the ground, for persons seem to have been infested about the neck, arms, shoulders and upper portion of the trunk while merely walking through high shrubbery and never sitting or reclining on the ground. It is stated, and I agree with the statement, that they may abound in meadows [f] (whence the name "mowers' mite" or "harvest mite") as well as in the woods and in areas of dense underbrush. But one must not forget that they are sometimes encountered in weed-choked city lots, in parks and in "the rough" around golf courses. I have observed cases of infestation from such sources, even from a lot adjoining my

(*b*) 6, 33, 45.
(*c*) 25, 42, 59.
(*d*) 50, 55.
(*e*) 4, 42.
(*f*) 9, 43, 59.

own home. European observers have found them in gardens in town [g] as well as in the rural districts. It has been stated that they abound along the banks of streams [h] and near bodies of water, but I can testify that they are also numerous in many inland districts. And they seem to be more numerous, or at least more troublesome, in certain areas than in other localities where the vegetation and soil seem identical.[i] No one has been able to explain this variation.

THE MITE: ITS LIFE CYCLE AND ITS HOSTS

The chigger, which is approximately the same the world over, is the six-legged red larva of the division of Arthropoda, class of Arachnida, order of Acarida, section of Prostigmata, family of Trombidiidae.[59] Scientists are not all in accord regarding characteristics of various subfamilies which they have described. The essential characteristics are: a hairy body, six legs terminating in claws; a rostrum bearing a pair of knifelike mandibles, and two palpae with five joints, provided with a trifid claw. It develops from the egg of an acarus, a Trombidium. Ewing [49] stated that "Today about 100 species of chiggers are known." [j] Trombicula irritans Riley is the common North American chigger, according to Ewing.[k]

In the warm days of spring the adults, male and female, end their hibernation in the upper layers of the ground and emerge. About two to four weeks later a large number (from 300 to 400) [l] of eggs are laid, and after three or four weeks larvae hatch on the surface of the ground and on low plants.[40] These larvae have six legs, are brick red and measure on the average 0.52 mm. in length and 0.31 mm. in width. They are active. Apparently they must lead a parasitic existence in order to survive,[55] and their hosts are reported to include domestic animals, rodents, birds, certain reptiles and man. The list of hosts includes sheep, goats, cattle, dogs, house cats, monkeys, rabbits, squirrels, moles, rats, house and field mice, bats, hedgehogs, shrews, voles, opossums, tinamous, domestic fowl and certain ground-nesting birds, frogs, toads, salamanders, lizards, certain snakes, land turtles, insects and arachnids.[m] Perhaps man is not the best suited host,[10] but at any rate he will do. A larva does not change hosts [n] and generally does not remain on the human body more than from two to four days.[o] It drops off, engorged

(*g*) 19, 26.
(*h*) 34, 43.
(*i*) 4, 29, 48.
(*j*) For description see 8, 13, 33, 38, 46, 49.
(*k*) 14, 17.
(*l*) 3, 42.
(*m*) 4, 15, 20, 29, 30, 33, 42, 47, 49, 51, 53, 59, 60, 61.
(*n*) 40, 44.
(*o*) 4, 34, 40, 42, 55.

with a fatty predigested tissue juice (not blood[p]). Then it goes into a pupal form, and in a week or two a colorless, eyeless eight-legged nymph emerges. After a few more days a second nymph form appears,[q]

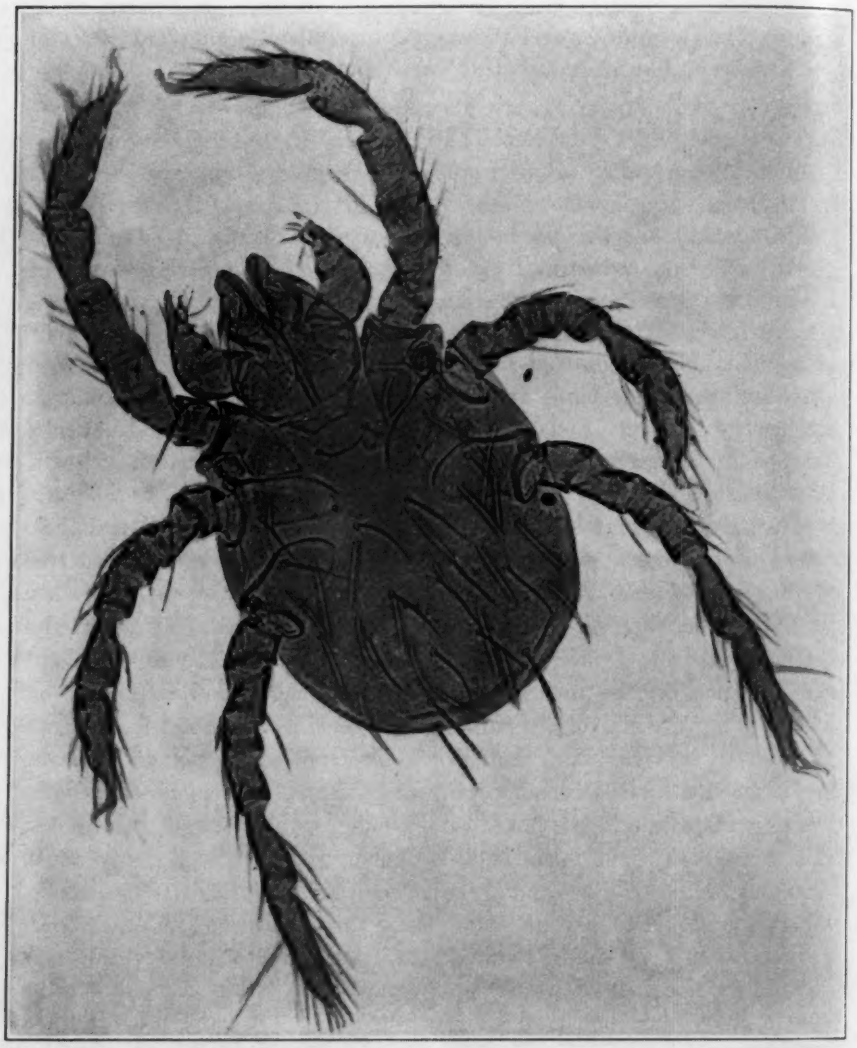

Fig. 1.—The common North American chigger, Trombicula irritans (Riley). A specimen from Dr. H. E. Ewing's collection, approximately × 112.

and after two or three more weeks that nymph becomes an adult. With the approach of cold weather the adult descends into the upper layers

(*p*) 2, 40, 55.
(*q*) 34, 55, 62.

of the earth,[r] where it spends the winter. The nymphs and adults live on plants and decayed vegetation. They are scavengers [14] and do not parasitize man or animals.[62] It has been shown that a chigger is the vector of the Japanese river fever, pseudotyphus or *Tsutsugamushi-Krankheit*,[s] and that the virus or organism (Rickettsia tsutsugamushi) [62] enters the larva from the tissues of its host, the rat or mouse, and goes on through the nymph, adult and egg stage to a new chigger in the ensuing year, this new chigger still harboring the virus and being able to infect man.[t] There is only one generation of chiggers each year.[u]

METHOD OF HUMAN INFESTATION

When a person walks through grass or underbrush he may become infested [29] as he comes in contact with vegetation on which the chiggers are presumably located. According to Marc André, however,[36] chiggers are found almost exclusively on the surface of the ground, only a few being present on even the lowest shrubs, from the stems and leaves of which they are easily knocked off. Ewing [4] contended that they are not found on grass or weeds but are present only on the ground beneath. I have observed that subjects may apparently become infested about the upper parts of the body while walking through weeds as high as the head or shoulders and that they may become infested without sitting or lying on the ground. Therefore I feel that many of the mites are actually present on tall weeds and bushes as well as on grasses, and I think that perhaps they may also be found on the leaves of small trees. This seems to be the opinion of most authors. Chiggers may also possibly get on man from an animal [42] or from clothing,[10] but once they are attached it is said that they do not change hosts.[v] Moran [60] found chiggers on mosquitoes, and he stated that the mites may gain access to human skin in this manner.

They may invade the skin of the host from the neck and shoulders downward, or, as happens more commonly, from the feet and ankles upward. As a rule they do not fasten themselves and feed immediately but run rapidly (covering about 10 cm. per minute, according to Toomey [3]) until they meet with an obstacle, such as a garter or a belt. Many attach themselves to the skin at points at which such obstacles are encountered, while others are scattered elsewhere. Attachment follows irregularly within a few hours after exposure.[4] As would be expected, the mites seem to prefer areas where the epidermis is thin

(*r*) 15, 29, 35, 40, 42, 55.
(*s*) 8, 18, 33, 34, 38, 53, 62.
(*t*) 4, 61.
(*u*) 15, 29.
(*v*) 40, 44.

and not toughened by trauma or exposure to the weather. Therefore, except in infants, they seldom attack the palms or soles and generally remain on parts covered by clothing. According to Lynch,[7] in small children the scalp may be involved, and other authors have mentioned the occasional involvement of the eyelids. Generally, but not invariably, the organisms attach themselves in the orifice of a hair follicle or sweat duct.[w] One or more mites may be anchored at the orifice of a single follicle.[3] As Ewing [4] has shown, they are too large to enter the follicle completely. I have observed many lesions which were not follicular.

METHOD OF ATTACHMENT AND SUCKING

Unlike the itch mite, the chigger does not burrow [x] but merely pierces the epidermis as deeply as possible with its pointed mandibular claws.[y] This forms an anchorage so secure that, as Ewing [4] observed, the mite must struggle for seven minutes in order to free itself. When the follicle is attacked, the epidermis is usually pierced at a point just inside the follicular orifice, the body of the mite remaining outside the follicle, tilted with the head downward. Fuss and Hauser [55] showed photomicrographs of the mite in this position, and Ewing [4] published a drawing. When the chigger has thus anchored itself it remains quietly in place and begins a process of epidermal liquefaction by extra-oral digestion.[z] Methlagl [32] showed a drawing of a mandibular claw of Allothrombium fulginosum Hermann, in which several fine canals are seen running through the entire length of the claw to its tip from glands situated just behind its base. He stated that it is unknown whether these glands produce a poison or a digestive secretion.[a'] The secretion has never been obtained for study.[31] At any rate it appears that this secretion flows down into the tear in the stratum corneum produced by the mandibular claw and by its action liquefies the epidermal cells with which it comes in contact. This liquid product is then supposedly sucked up by the chigger's mouth, which is pressed close to the epidermal wound.[40] In this manner the glandular secretion penetrates more and more deeply into the epidermis, and a tubelike opening is formed, surrounded by cornified epithelium, this cornification apparently being a defense reaction of the host's epidermal cells against the glandular secretion of the mite.[b'] Probably it is this glandular secretion rather than the mechanical irritation due to the claws which causes the ensuing dermal reaction and the characteristic clinical manifesta-

(*w*) 4, 29, 31, 43, 60, 61.
(*x*) 13, 29, 40, 43, 47, 55.
(*y*) 4, 13, 40, 43, 48, 55.
(*z*) 13, 48, 55, 56.
(*a'*) 43, 48.
(*b'*) 30, 40, 56.

tions.[c'] When the larva has thus become engorged, like a tick, it drops off.[d'] Talice [45] and Fuss and Hauser [55] stated that even if it is removed early, enough secretion has usually been introduced into the epidermis to produce a characteristic itching lesion which persists as long as any

Fig. 2.—High power magnification, showing mouth parts and palpae of the common North American chigger, Trombicula irritans (Riley). A specimen from Dr. H. E. Ewing's collection, approximately × 464.

(*c'*) 10, 31, 47, 50, 55.
(*d'*) 29, 40, 46, 48, 61.

other chigger bite. There has been some controversy regarding the presence or absence of a proboscis and of a tonguelike organ in the mite, but at present the weight of opinion seems to be against the existence of such a structure.[e']

PATHOLOGY

According to von Mallinckrodt-Haupt,[48] "At the point of penetration the epithelium shows parakeratosis, [but] otherwise little change." There is ". . . typical papule formation with partly exudative, partly productive inflammation. The small cell infiltration is most marked around the hair follicles, arranged on both sides of the hair shaft. In the more distant vicinity there is only perivascular infiltration consisting partly of leukocytes." Fuss and Hauser [55] gave two pictures showing a chigger attached to the skin, the damage to the epidermis beneath and the stream of white blood elements coming concentrically to this area. On the borders were transudation, hyperemia and finally also hemorrhage, to clarify the clinical picture. Kyrle [13] observed intracellular edema and round cell infiltration in the epidermis. In places this edema was so marked as to sever the cell bindings, and about the end of the epidermal opening (*Saugrohr*) it was most pronounced, a small vesicle being present. Kyrle observed in the epidermal lesion what he took to be the sucking tube of the mite. Later investigators felt that this was not the correct interpretation and that this tubelike structure was really the epithelium changed and liquefied by the secretion of the larva so that it formed a hyaline wall. Kyrle never observed pronounced inflammation.

Toomey's [8] description of the dermal changes has been cited by Pick,[42] by Gans [31] and by von Mallinckrodt-Haupt.[43] Toomey described four phases of evolution and two of involution, which are as follows: The first phase of evolution is the phase of spastic ischemia, which commences much more slowly than in insect bites. The ischemia in time is accompanied by subpapillary lymph stasis and slight tumefaction. This gradually merges into the second phase, which is characterized by active hyperemia and serous exudation. Only the terminal arteries and arterioles of the subpapillary zone, and not the papillary vessels, show the acute dilatation, accompanied by a perivascular lymphocytic infiltration and serous transudation with marked deposition of fibrin. Toomey also stated that:

> The transudate virtually contains no cellular elements. The arterioles during the period of transudation show moderate hyperplasia of the media, but no thrombosis. The venules show no change except a slight proliferation of the intima. The coil glands and hair follicles show no constant changes, though

(*e'*) 40, 48, 56.

the cells of the coil glands are often much swollen. There is a slight degeneration of the connective tissue cells in the center of the papule, and a moderate cytolysis of the lymphocytes. Polymorphonuclear leukocytes are present only in small numbers.

During this second phase the serous transudate works upward through the derma, and it reaches the basement membrane of the epidermis about the time the third phase ensues. This third phase has all the features of the second plus capillary hemorrhage. The cellular degeneration and the serous transudation have become more pronounced, but the transudate has not broken through into the epidermis. The capillary hemorrhage, though extensive, clots rapidly, owing to the large amount of fibrin in the transudate.

The epidermis, hitherto unchanged, begins to show some edematous swelling of the malpighian cells. Karyokynesis and keratolysis are not present.

The fourth phase is ushered in by the transudate breaking through the corium into the epidermis. The rent in the basement membrane takes place slightly to one side of the infested hair follicle (if the lesion is follicular). The transudate infiltrates the mucous layer, slightly raising the stratum corneum, lucidum and granulosum. This type of vesiculation does not occur in all trombidiasis papules. When it does not, there is a minute vesicle formed under the stratum germinativum; the tension in such vesicles is insufficient to rupture the basement membrane. The vesicle does not reach the apex of the papule on account of the greater resistance of the perimural cells about the hair follicle or sweat duct which is (usually) the central axis of the papule. The contents of the vesicle are sterile and only very slightly cellular, the cells being mostly lymphocytes. There is a slight swelling of the epidermal cells which form the wall of the vesicle. With the formation of the vesicle the necrosis of the corium reaches its height; it then shows an organized hemorrhage in the midst of irregularly distended elastic fibers and degenerated connective tissue cells.

Involution may be divided into two phases: one of primary resorption and one of terminal repair. Its first phase commences a number of hours after the formation of the epidermal vesicle. The first evidence is usually a desquamation of the corneal layer. The contents of the vesicle never become purulent, unless secondarily infected. If the roof has not been ruptured by scratching, the contents of the vesicle are rather rapidly absorbed. The other products of evolution are only very gradually absorbed. The cellular detritus is absorbed somewhat before the resorption of the clotted hemorrhage. The latter undergoes involution as in any other hemorrhage into the corium. Blood pigment may often be found at the site of the papule many weeks after the acute process has subsided. Slight sclerosis of the corium invariably results, and occasionally a deep fibrous nodule is produced, but more commonly a barely visible retraction of the epidermis results.

To summarize, then, the phases are those of spastic ischemia, exudative arteriolitis, vasolysis with hemorrhage and vesiculation, followed by primary resorption and terminal repair. Thus, clinically, the earliest lesion to be noticed by the patient is seldom the actual bite but rather the earliest stage of the tissue reaction, which Toldt[9] noticed as a small nonpruritic red macule which appeared while he was still in the field. Between three and twenty-four hours after exposure the lesion

Fig. 3.—Photomicrograph of section from a lesion on the leg, four days old, showing vascular engorgement in the middle portion of the cutis, lymphocytic perivascular infiltration and edema; approximately × 128.

Fig. 4.—High power magnification of vesicle in section from a lesion on the leg, four days old, showing contents of vesicle and epidermal edema; approximately × 321.

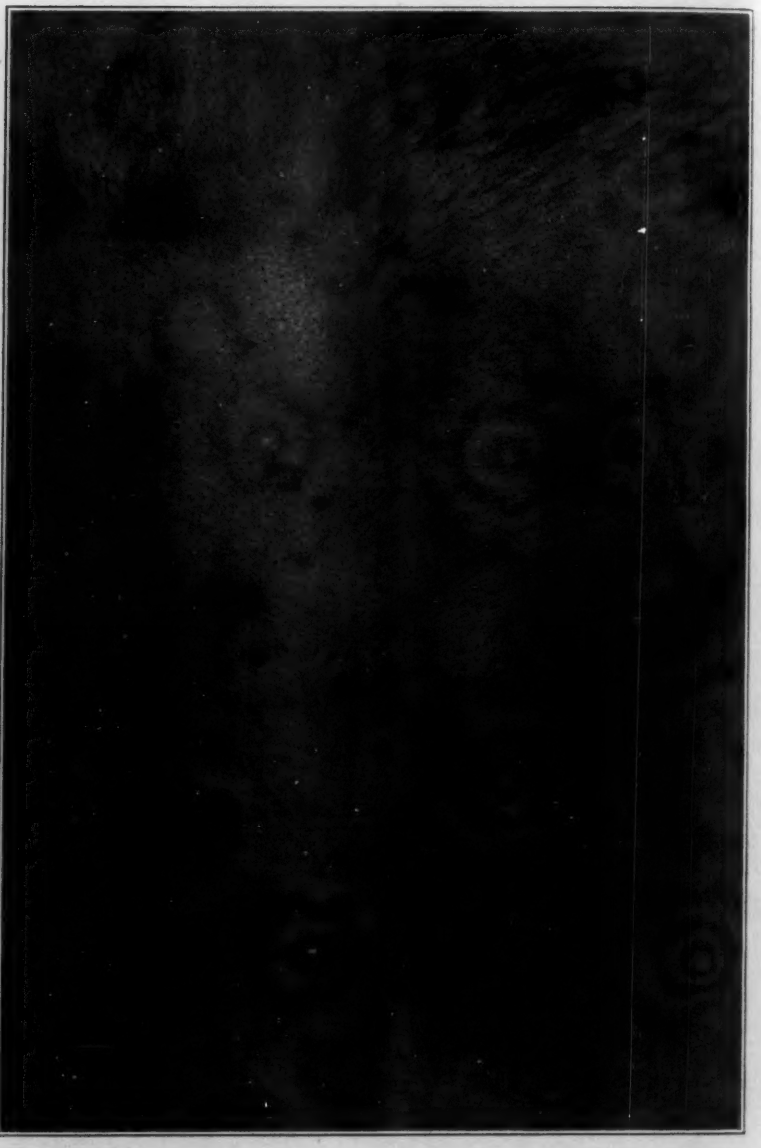

Fig. 5.—Typical hemorrhagic lesions on the leg, of six days' duration. Three lesions near the center of the picture are capped with the typical small vesicle, which may or may not be present.

becomes an urticarial papule and itches intensely. Generally this is the first manifestation noticed by the patient. It is often, but not invariably, follicular.[f'] In this lesion the larva, if still attached, appears near, or at, the center as a minute red dot.[g'] Within from one to three days the lesion becomes a pruritic, pale red, flat or conical papule—conical lesions often occur[h']—and especially on the legs, thighs and lower portion of

Fig. 6.—Hemorrhagic lesions on the thorax, nearly all of which had been excoriated.

the abdomen these papules may become grossly hemorrhagic and deep purple.[i'] Some of the papules, whether hemorrhagic or not, may be surmounted by a pinhead-sized vesicle containing clear fluid.[j'] The itching is intense, generally being worse on the second or third day,[55]

(*f'*) 43, 45.
(*g'*) 50, 55.
(*h'*) 4, 43, 45, 55, 59.
(*i'*) 31, 43, 50.
(*j'*) 4, 31, 43, 55.

and may persist after fourteen days.[k'] Owing to this the vesicle is generally scratched open and may be secondarily infected. If it is not excoriated it usually dries and is followed by scaling. Involution begins about the third day and is extremely slow. The papule shrinks, and pigmentation appears, persisting for from ten to fourteen days or longer.[l'] The lesions may be from 0.4 to 2 cm. in diameter[m'] and are sometimes larger. A lesion may last several weeks, during which time it may itch intermittently.[n'] Last summer I had three or four persistent lesions on my trunk and legs which continued to be pruritic at irregular intervals and lasted from ten to twelve weeks. The lesions may be few or many, depending on the number of larvae on the skin; they may be large or small, visibly hemorrhagic or not hemorrhagic, and they may or may not be capped by a tiny vesicle or crust. The lesions are irregularly scattered and are likely to be more numerous about points where the clothing binds, as at the garter-line or waist-line. If infestation occurs from the feet and ankles, the legs and thighs are especially involved, the lesions becoming more sparse in the upper parts of the body.[o'] The male genitalia are frequently affected, and in those parts the edema may be great.[3] In certain cases, when a person has been infested while sitting on the ground, the buttocks alone may be involved.[3] Sometimes the infestation occurs about the neck, arms or shoulders,[59] and when this is the case most of the bites are located on the upper half of the body, including the neck but seldom the face.[45] Lynch [7] has mentioned involvement of the scalp.

SUBJECTIVE SYMPTOMS

The actual bite is seldom felt. Subjective symptoms appear later, being apparently due to products of the action of the mite's glandular secretion on the tissues of the host.[10] Toldt [9] was exposed in the afternoon, and he observed that his own lesions first began to itch after he had retired that night. Fuss and Summent, like Toldt, stated that the itching is worse at night than in the daytime.[p'] They first noticed pruritus on the neck three hours after propping up the branches of a fruit tree.[50] Carle stated that the itching starts twenty-four hours after exposure.[59] He said that it is more exactly a smarting sensation, which becomes a burning, occurring in exacerbations, incessant itching being present in the intervals. The disturbance is not relieved by scratching. The pruritus lasts for from eight to fifteen days; Toldt stated that it

(*k'*) 43, 55, 59.
(*l'*) 55, 59.
(*m'*) 4, 43, 50, 55, 59.
(*n'*) 10, 43, 59.
(*o'*) 29, 45, 50, 59.
(*p'*) 9, 50, 55.

gradually diminishes over a period of two weeks.[9] It can be prolonged by scratching, bad hygiene and too intensive treatment.[59] According to von Mallinckrodt-Haupt,[43] the bites "last for weeks and itch severely." Subjective symptoms persist for several days after removal of the mite, according to Talice [45] and Fuss and Hauser,[55] and André expressed the opinion that this is due to the persistent action of irritating secretions inoculated into the host's skin. The itching is intense; it is worse on the second or third day [55] and may even persist after fourteen days. Ewing found that it reached its maximum on the second day.[4] Intense itching may not subside for a week or more.[29] Fortunately the spots do not all itch at the same time.[10] I have had many lesions on my legs and trunk and have noted paroxysms of severe itching for from two to four weeks or longer.

COMPLICATIONS

The itching is so severe that many lesions are excoriated and secondarily infected. Furunculosis [q'] or lymphangitis [43] may complicate the picture, and secondary urticaria may occur,[59] even in areas not attacked by the mites. If the lesions are numerous, or if the patient is an infant or an elderly person, there may be a certain degree of systemic reaction, with some fever,[r'] and headache; [43] albuminuria has been reported.[43] Pruritus often interferes with sleep and thus affects the general health; [s'] phenomena due to nervous excitation have been observed.[t'] Thus far the only disease known to be transmitted by chiggers is pseudotyphus, the Japanese "river fever" (*Tsutsugamushi-Krankheit* [62]).

DIAGNOSIS

Rural residents usually have no difficulty in recognizing chigger bites and seldom consult a physician. The location, course and subjective symptoms, as described, are so characteristic that diagnosis is usually a simple matter. Of course, the ideal way to establish the diagnosis is by finding the larva attached to the epidermis at or near the center of the lesion, where it appears as a minute red dot.[u'] Ewing [4] and Fuss and Summent [50] stated that one should try to find it with the aid of a hand lens. But unfortunately it can seldom be found,[v'] for usually the physician is not consulted until it has dropped off.[w'] Von Mallinckrodt-Haupt stated that he was able to find larvae on the skin on the night of the exposure but not on the following morning.[43]

(q') 43, 47, 59.
(r') 2, 4, 29, 43, 45, 47, 57, 59.
(s') 4, 43.
(t') 4, 45.
(u') 43, 45.
(v') 42, 55.
(w') 45, 55.

According to Toldt,[2] Dosaler removed mites from lesions on his legs soon after infestation occurred. Ewing [4] carefully observed ten bites on his legs. At the end of the third day half of the larvae remained on the lesions, and the last ones dropped off during the fifth day. But ordinarily the clothing probably brushes them off much sooner, and Pick stated that usually all fell off within the first forty-eight hours.[x'] I agree that they are hard to find, and I have never obtained an intact specimen by inspection of lesions.

The bites of spiders or of flying insects, including mosquitoes, bees, wasps, black flies, sand-flies, gnats and midges often bear some resemblance to the earlier stages of the chigger bite, but usually they are single, or at any rate less numerous than chigger bites, and are located on exposed parts rather than on covered areas; they are usually felt immediately and are seldom hemorrhagic. The bite of the common flea (Pulex irritans) or that of the sand-flea (Pulex penetrans) also may resemble the first stage of the lesion caused by chiggers. The sand-flea usually attacks the feet and ankles. Bedbug (Cimex lectularius) bites may sometimes cause confusion, but their central punctua and short duration facilitate differentiation. The possibility of lesions produced by the brown-tailed moth, tick bites and infestation with poultry itch and other mites must also be considered at times. The eruption of grain itch is similar to that caused by chiggers, but the lesions are more polymorphous and are not grouped at points where the clothing constricts the skin. Scabies with secondary urticaria may resemble chigger bites at times, but chiggers produce no burrows and are not likely to invade the hands. Dermatitis due to schistosomes, with pruritic papules becoming pustules, may be present about the ankles and legs of persons who have been wading.

Urticaria and particularly prurigo mitis (Strophulus pruriginosus) are generally not so intensely pruritic as lesions caused by chiggers; prurigo mitis seldom occurs in adults; the lesions are not hemorrhagic. Of course typical urticarial lesions may accompany chigger bites as a complication. The papular type of erythema multiforme may bear some resemblance to chigger bites, but the distribution and the intensity of pruritus are differential points. Ewing [4] suggested that nettling from some thorned plant might cause confusion. A papular urticarial eruption due to grain dust as described by Michelson [1] may occur on covered parts, but it is neither vesicular nor hemorrhagic. French and German authors [y'] mentioned the differentiation between chigger bites and meadow dermatitis (*Wiesendermatitis*), but there must be slight, if any, resemblance between the two conditions.

(x') 42, 55.
(y') 50, 57.

IMMUNITY

In many parts of the world natives and rural residents are often thought to be immune to chigger infestation,[59] perhaps owing to repeated exposure. According to Vitzthum,[40] variations in reactions are observed in Europe and elsewhere. Certain races or local groups seem to be especially immune. This is said to be true of the Papuans in New Guinea, where outsiders (Europeans and Malays) are severely attacked. In some localities many larvae are present but no one is bitten. In Uruguay, according to Talice,[45] peasants seem immune but city dwellers visiting the rural districts are attacked severely on first exposure and less severely during the rest of the season. André [51] was severely bitten in 1927 and in 1928 but was only slightly affected in 1929 after thorough and long exposure. Therefore he expressed the opinion that previous attacks may confer a more or less lasting immunity. Von Mallinckrodt-Haupt [44] stated: "After several years a partial immunity seems to arise." Fuss and Hauser [55] found no personal immunity in themselves but felt that some other persons apparently acquired it. Toldt [21] mentioned the apparent immunity of certain persons and animals and also the apparent differences in the severity and duration of the symptoms in different localities. Inhabitants of the lower districts of Austria seem less susceptible than those of the Tyrol. Vitzthum [40] and von Mallinckrodt-Haupt [48] expressed the opinion that certain micro-organisms may play a part in the form of additional infection occurring at the time the bite is inflicted. These micro-organisms may be present in some localities and not in others, which might explain variations in the severity of symptoms of infestation with chiggers as observed in different locations. Hecht [54] has discussed reactions to the bites of insects and mites from the immunologic standpoint. He found that differences in the strength of the reaction in different persons and changes in its strength in the same person could be produced experimentally. He noted the time of appearance, the size and the duration of the lesion. Antibodies were demonstrated by the Prausnitz-Küstner method. He observed a type specificity in reactions to insect bites, a given person reacting strongly to one type and weakly to another type even closely related or even to the same type from different lands (e. g., types from Germany and from Italy). But the bite of one organism may possibly sensitize a person to the bite of another variety of the same family (e. g., German and African mosquitoes). Hase [37] has expressed a similar opinion in reviewing the literature on this subject.

It has often been observed that women and children seem more susceptible than men, perhaps owing to differences in dress and in the texture of the skin. Ewing [4] suggested that perhaps individual immunity is more apparent than real. He felt that persons on a certain picnic

would not be equally exposed to attacks of the mites and their clothing would vary greatly in its ability to protect, especially about the feet and ankles, and some would never sit or recline on the ground. There is known to be a great variation in the intensity of chigger infestation even over a small area. Although hundreds of persons have been found to be susceptible, no one has been found who was clearly shown to be immune.

I have observed apparent instances of partial immunity, but I can make no comment regarding the possibility of complete immunity. I have never observed the development of recognizable immunity either in myself or in other persons. Farmers who have been repeatedly exposed seem to be as susceptible as picnicking city dwellers, but they are much less likely to consult a physician.

TREATMENT

In the treatment for chigger bites there are three objectives: (1) the destruction or removal of all parasites, both free and attached; (2) the relief of the severe itching by palliative measures; (3) the treatment or prevention of secondary infection. From a review of the recent literature and from my personal experience, I should say that the first objective, removal of the mites, is perhaps best accomplished by an application of benzene, kerosene or a copper compound, followed by bathing for a half hour with liberal application of soap; this in turn should be followed by thorough rinsing with fresh water and patting dry rather than rubbing with a towel. A complete change of clothing is advisable, since active mites may remain in infested clothing.

Since it seems that the objective and subjective symptoms usually continue unabated for days after the parasite has been removed, the fulfilment of the second and third objectives is of the greatest importance. A variety of palliative measures has been suggested. I have found that brief applications of rubbing alcohol (alcohol 70 per cent) to the affected areas, followed immediately by a mild antiseptic antipruritic ointment, is satisfactory. A clean and generally effective application, in my experience, has been that of boric acid ointment U. S. P., to which may be added from 1 to 2 per cent of phenol, the strength of course being in inverse proportion to the area of skin to be covered, and 0.2 per cent of menthol. This ointment should be applied sparingly at least three times a day and used as needed to relieve itching; it is to be rubbed in gently, and the remainder is wiped off with cotton. A little plain talc may then be dusted over the surface. Rubbing alcohol has been shown to have value as a parasiticide; it also helps to remove or prevent secondary infection and relieves itching, as do the phenol and menthol. The boric acid ointment is mild and helps to combat secondary

infection, and the talc is cooling and protective. These applications are made after the daily bath and at least at two other times daily. Scratching must be prevented, and canvas gloves may have to be worn during sleep for this purpose. These measures fulfil both the second and third objectives as a rule. But if serious secondary infection has occurred, of course other measures may be used as indicated.

PREVENTION

Infestation may be prevented by the use of protective clothing and by parasitocidal applications. Ewing [4] found that puttees or high laced boots are effective barriers against the invaders, and he also advised the use of clothing materials of a sufficiently tight weave to prevent the mites from getting through the meshes of the cloth. Tightly fitting cuffs are recommended. Obviously in warm weather such clothing may be uncomfortable, and therefore most persons prefer to rely on parasitocidal applications.

Sulfur has long been recommended as a repellant. Ewing stated that he tried it and found it effective; he dusted it uniformly over the skin or into the clothing with a shaker. I have used it for several seasons on myself and have prescribed it for others when going into areas which were well known to be infested, and I can recommend it highly. As an added precaution one should bathe as promptly as possible after exposure to chiggers, in order to remove the somewhat irritating sulfur and to destroy any surviving mites.

By prolonged efforts foci of chiggers in infested areas may be destroyed. This may be accomplished by removing weeds and underbrush, keeping the grass cut short and carefully spraying the vegetation with sulfur by means of a dust gun or dust blower. It is recommended [s'] that 50 pounds (22.7 Kg.) of sulfur per acre (4,047 square meters) be used. Infested lawns have been freed from chiggers by the dragging over them of a piece of canvas or sacking saturated with kerosene, but it should not be allowed to drip or remain long in one place, or the grass may be killed.[29]

SUMMARY

Chiggers is a popular name for the organism causing trombidiosis or trombidiiasis, the infestation of man with a larval acarid of the family Trombidiidae. Domestic animals, rodents, some reptiles and ground-nesting birds are similarly parasitized. This parasitism may be a necessary part of the life cycle of the chigger.

The distribution of these mites is world-wide, the organism being found in both temperate and tropical zones and in mountains as well as in lowlands. The nymphal and adult forms are scavengers, and the

(s') 4, 21, 29, 47.

adult form spends the winter underground. There is but one generation each year.

Chiggers are found especially in areas overgrown with wild brush and weeds and in fields, but they may also be encountered in vacant lots, in parks and gardens in cities and around golf courses. Infestation is common along the northern and southern shores of Lake Erie, on islands in that lake, in northwestern Ohio, in northern Indiana and in the district of small lakes in southern Michigan. Farmers and picknickers are commonly infested but usually do not consult a physician.

Infestation may progress from the feet upward, which is the most common type, or from the neck downward, and the largest number of bites occur at points where the clothing constricts the skin. The bite is usually, but not always, follicular, the mite being fastened temporarily as a red speck at the center. Only the mandibular claws penetrate the stratum corneum, and the symptoms are probably caused by the digestive secretion of the mite, which flows into the wound. Thus a small pruritic papule appears which may later enlarge and be surmounted by a tiny vesicle or perhaps become grossly hemorrhagic. Intense itching with exacerbations persists and may continue for weeks, while gradual involution occurs. Toomey's description of the histopathologic changes is quoted.

The mites can rarely be found unless the lesions are seen early. The bites of other mites and spiders and of insects are usually felt at the time and run a shorter course. The lesions of grain itch may be similar to lesions caused by chiggers. Urticaria, nettling by a thorned plant or grain dust dermatitis may cause confusion in diagnosis.

Certain aborigines and occasionally some other persons appear to be immune, and perhaps some degree of immunity can be acquired through repeated exposures.

Treatment consists of removing the mites, applying palliative measures and combating secondary infection. Methods of treatment are described.

Infestation may be prevented by dusting the skin with sulfur or by wearing protective clothing. Measures are outlined for freeing infested territory of chiggers.

A bibliography is appended, beginning with Toomey's article, published in 1921.

Dr. H. H. M. Bowman, Professor of Biology at the University of Toledo, gave helpful suggestions regarding field investigations; Dr. H. E. Ewing, of the Bureau of Entomology, United States Department of Agriculture, Washington, D. C., helped in identifying specimens and loaned excellent specimens of Trombicula irritans Riley; Dr. Thomas L. Ramsey, pathologist, St. Vincent's Hospital, Toledo, Ohio, prepared the pathologic specimens and translated Moran's article from the Spanish, and Dr. Walter D. Slager, of the laboratories of St. Vincent's Hospital, did the photomicrography.

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The following letters, appended to the references, designate features to be found in each publication:

A, geographic distribution;
B, the mite, its varieties, life cycle and hosts;
C, the mechanism of the bite;
D, the pathologic features;
E, subjective and objective symptoms; complications;
F, diagnosis;
G, the question of immunity;
H, treatment;
I, prevention.

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ABSTRACT OF DISCUSSION

DR. BEDFORD SHELMIRE, Dallas, Texas: I have been interested in the chigger problem for some years, as there is a high incidence of chigger infestation in Texas.

It is the larval chigger which attacks man, nymphs and adults being entirely innocuous. When it is fully engorged this tiny mite is about the same size as the six-legged larval Acarus scabiei and therefore less than half the size of the adult female Acarus. Although the pigment is more marked after engorgement the mites are barely visible on the human skin as a pinpoint red body. With a hand lens they can occasionally be seen before they attach themselves.

Chiggers require an hour or longer to attach themselves after infestation. This is probably due to the fact that man is an abnormal host. After the organism has become attached it remains at the original point of attachment for from twenty-four to forty-eight hours, the time required for full engorgement. The cutaneous reaction, resembling bites of other insects, appears usually after twenty-four hours. Variations of from four to thirty-six hours have occurred. Contrary to the former belief and to statements in dermatologic texts, the engorgement is not a death feast, and the chigger does not burrow into the skin. The North American chigger is much like a tick. After it is fully engorged it drops from its host. After passing through an unknown number of nymphal stages it develops into the innocuous adult red velvet mite.

Ewing has stated that chiggers live in the ground shaded by vegetation but do not infest vegetation itself. To prove this contention, he collected vegetation from an area supposedly infested with chiggers and shook the plants over a white paper. As no chiggers were found on the paper, he concluded that these tiny arthropods did not infest vegetation. I have repeatedly driven volunteers in automobiles into fields known to be infested with chiggers. When these volunteers dangled their legs in the vegetation without touching the ground, chigger bites invariably resulted. Vegetation was also collected and handed to persons seated in cars. These persons rarely escaped chigger bites. I have seen four bites fol-

low the holding of an entire sun flower the stem of which was cut several inches above the ground. This seems to prove that chiggers inhabit vegetation as well as the upper layers of soil. Dr. Parkhurst referred to bites on the neck as evidence of the fact that vegetation may be infested with chiggers. Since his patients touched the ground this is not definite proof, as larval chiggers often travel rapidly over the body for an hour or longer before attaching themselves. Chiggers often infest the scalp of infants and young children, and to this extent they resemble Acarus scabiei.

Dr. Parkhurst showed pictures of rather extensive bites. Such bites are occasionally due to chiggers. However, as he did not demonstrate chiggers attached I do not believe that his evidence was conclusive.

None of the specimens which Dr. Parkhurst showed resembled the one which attacks man in Texas and which is identical with Ewing's specimen. All types of Trombidiidae or harvest mites, both predatory and free living, inhabit vegetation. In my section of the country only the North American chigger and Pediculoides ventricosus have been found to infest man. Further evidence is needed to prove that the specimens shown by Dr. Parkhurst are predatory on man.

Dr. C. Fred Lehmann, San Antonio: Chiggers are so common in the South that many residents of that section get to be like the Louisiana dog with fleas—tired of scratching them. I think that in southwestern Texas where rainfall appears rather sporadically, mostly in the spring, the incidence of chiggers tends to indicate that these organisms are contracted from grass, for in the dry seasons they are not as numerous. I think that when the fresh grass is growing the chiggers are more prevalent than in the seasons when there is a scant growth of grass. Another fact that bears out this observation is that, as Dr. Parkhurst mentioned, a means of coping with the chigger problem is to cut the grass short. Another fact is that when there is a rainy season in the middle of the summer there usually is a recrudescence of the parasites.

Regarding the differential diagnosis, the chief point is to differentiate the lesions caused by chiggers from flea bites and mosquito bites. The mite frequently causes folliculitis of the scalp going into pyoderma, particularly in children. Children run around in the grass, and if chigger bites are not watched for recurrences of folliculitis may develop.

Finding the parasites is a help. There is little difficulty when they are engorged with blood, but it is difficult to locate them when they are not. I did not have the same experience as Dr. Shelmire. He must have a quick eye to find these little parasites running about the skin. Frequently they can be found attached to a hair follicle. A history of the patient's having been in the grass and the presence of lesions on tender sites is helpful in the diagnosis. Infestation with chiggers is a big problem in Texas, but the condition is so common that most persons do not apply for treatment.

I wish Dr. Parkhurst would tell more about the preventive measures. This is a problem at the army camps around San Antonio, Texas. The most common measure of prevention is to add a small amount of sulfur to talcum powder and use the mixture freely. After the chiggers are on the body the best treatment is to lather with a good mercurial soap and let it dry on the body for a few minutes. That often stops the attack immediately.

Dr. Joseph A. Elliott, Charlotte, N. C.: Chiggers are not a medical problem in my section of the country. While chiggers are plentiful, every layman knows that a bath with a strong saline solution taken shortly after exposure

will clear the skin of parasites. Once the parasites are embedded in the skin, I obtain satisfactory results with a weak ointment of sulfur and peruvian balsam. Practically all my patients who apply for aid because of infestation with chiggers are visitors from northern states, where this parasite does not exist.

Dr. Fred D. Weidman, Philadelphia: I wish to disclaim at once any superior knowledge of particularly itchy cutaneous diseases in general, but I do know my chiggers. The condition caused by them is rampant in New Jersey and Delaware, but it does not impress me as being the same as that which Dr. Parkhurst has described. According to his description, the lesions are widely distributed—not so definitely localized to the garter and belt line as in my section of the country. The speed with which the parasite travels, too, is surprising; and when it is stated that the disorder is such a menace that it is necessary to cut down weeds and grass to make life bearable, I confess that I do not know what it is all about.

Dr. Howard J. Parkhurst: My purpose in reading the paper was to dispel the rather prevalent idea that one sometimes gets from textbooks that this condition is limited to the southern states. I have observed cases in the neighborhood of Toledo, Ohio, and also in southern Ontario, but I recognize, of course, that they are much more numerous in the southern states. As chiggers are present there in enormous numbers and appear on the skin all the time, it must be much easier to discover the parasites. Both Dr. Shelmire and Dr. Lehmann mentioned that the chigger becomes engorged with blood and takes on the bright red color in that way, but I wish to remind the members that entomologists have found that the organisms do not become engorged with blood but rather with a fatty substance resulting from digestion of the epidermal cells.

I agree that natives and farmers do not come to the physician for treatment, but they all have the condition and treat it themselves. I feel that sulfur must be effective, and for prophylaxis sulfur is the best thing I have found. I think that bathing is a valuable means of preventing infestation. The lesions produced by these parasites in Pennsylvania and in Delaware may not be so large as in my locality, but there are recorded in the literature cases in which lesions as large as, and occasionally larger than, a large coin were observed.

CUTANEOUS TUBERCULOSIS

ITS RELATION TO THE IMMUNE ALLERGIC STATE

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Tuberculosis of the skin is relatively rare in comparison with other forms of tuberculosis. Even in the countries in which lupus vulgaris is most frequently seen, the proportion of it in relation to pulmonary and surgical tuberculosis is small. If in spite of that fact tuberculosis of the skin is made a center of attention for research, many fundamental facts, especially immune biologic features, will be found by clinical and experimental work. It is easy to understand that in the skin far more than elsewhere there is a better possibility of recognizing the relations between the clinical picture and these allergic reactions. Moreover, the skin plays an important rôle in allergy and immunity. I remember the close relations between the reticulo-endothelial system and the skin, the research work concerning the dermatophytons done by Bloch and that regarding esophylaxis of Erich Hoffmann and his students. Furthermore, the conception of allergy was formulated by Pirquet on the basis of observations made on the skin.

In studying tuberculosis Robert Koch [1] demonstrated as early as 1891 on the skin of guinea-pigs the differences between primary infection and reinfection or superinfection. Thus he established a basis for all biologic studies of this type. I wish to recall his observations at the beginning of my discussion.

If the skin of a normal guinea-pig is inoculated with tubercle bacilli, after eight days a papule forms which soon becomes an irregularly bordered ulcer. This reaction is followed in a few weeks by regional lymphangitis and lymphadenitis. Later development depends on the number and virulence of the bacilli.

On the other hand, similar intracutaneous inoculation with tubercle bacilli of previously infected guinea-pigs results within twenty-four hours in marked edema and swelling at the site of inoculation, the changes frequently going on to a local necrosis. These changes disappear

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Studies and contributions from the Department of Dermatology and Syphilology, University of Michigan Medical School, service of Dr. Udo J. Wile.

1. Koch, Robert: Gesammelte Werke, Leipzig, Georg Thieme, 1912.

rapidly, and the site of reinfection may be cleared up in the time necessary for the development of the primary lesion.

These observations of Robert Koch on inoculation tuberculosis were extended by Lewandowsky [2] to hematogenous infection.

If tubercle bacilli are injected into the ventricle of the heart of a normal guinea-pig there develops after an incubation of two weeks small papules covered with a scale. These papules increase and coalesce rapidly, a diffuse papulosquamous dermatitis resulting.

If tuberculous animals are superinfected in the same way, most of them die of anaphylaxis. The surviving animals show a picture entirely different from that just described.

After twenty-four hours there develop a slight follicular swelling and redness of the skin of the abdomen; this is followed two days later by a diffuse desquamation. After from ten to fourteen days there appear circumscribed yellowish papules which are transparent in the center and show in part a tightly adherent scale or crust.

Still more clearly differentiated are the histologic pictures.

The tissues of the primarily infected animals show no characteristic tuberculoid structures; there are only not sharply demarcated infiltrates with polymorphonuclear leukocytes, lymphocytes, fixed connective tissue cells and epithelioid cells. No giant cells are present. In every field one observes many tubercle bacilli.

In tissue from superinfected animals there are sharply circumscribed small infiltrates of marked tuberculous structure showing many epithelioid cells and giant cells. Both caseation and necrosis are present around the arteries. Bacilli are extremely rare.

On the basis of these observations Lewandowsky concluded that whenever bacilli are growing unhindered in the body the organism responds with a nonspecific inflammation. In opposition to this, tubercles and tuberculoid structure are produced by the action of bacillary antibodies disintegrating the tubercle bacilli.

This rule of Lewandowsky is not confined to tuberculosis alone; it outlines the whole problem of primary infection and reinfection or superinfection. This problem is still today one of the most discussed questions in research on tuberculosis, particularly on tuberculosis of the skin.

The picture of the primary infection described by Koch as occurring in guinea-pigs is the same as that of the primary infection in man.

However, the picture of reinfection and superinfection is changeable in man, and there is extraordinary variability in form and course, depending on different factors, such as the type, the number and the

2. Lewandowsky, Felix: Die Tuberkulose der Haut, Berlin, Julius Springer, 1916.

virulence of the infecting bacillus—factors which are difficult to ascertain in the individual case. But all these factors are overshadowed in importance by the reaction of the infected organism, that is, by the immune biologic events, influenced by the route and localization of the infection.

Certainly it must be conceded that the present methods for determining the immune biologic state of the organism in the individual case are not satisfactory, and it would be well to discuss first what conclusions can be drawn from the results. These methods include complement fixation, the tuberculin test and histologic examination.

Concerning the complement fixation, there is much material available. Funk [3] and Reiss [4] and I [5] have tried to find out whether there is a relation between complement fixation and the clinical features of tuberculosis of the skin. We were not able to demonstrate any definite relationship, except the fact that there is a high percentage of positive results in cases of scrofuloderma and of tuberculosis verrucosa cutis.

As to the reaction to tuberculin, the subcutaneous test is of no importance for the questions discussed here. However, the different forms of cutaneous tests have come to be the standard method for determining the allergic state in tuberculous diseases of the skin, in spite of the fact that the majority of adults are infected with tuberculosis and react positively. Paradoxically, the fact that in some cases of tuberculosis of the skin there is relatively often a negative reaction to an intracutaneous test has always awakened a great interest in the cutaneous reactions as associated with tuberculosis of the skin.

The whole problem is much elucidated by quantitative intradermal tests, the use of which in cutaneous tuberculosis was introduced by Jadassohn.[6] Two of his students, Martenstein and Noll,[7] demonstrated by this method that the percentage of positive results exhibited by patients with tuberculosis differs substantially from the percentage obtained in normal persons, so that some persons with tuberculosis of the skin react to a stronger and some to a weaker solution of tuberculin

3. Funk, Carl F.: Die klinischen Formen der Hauttuberkulose, Ergebn. d. ges. Med. **19**:259, 1934.

4. Blumenthal, Franz, and Reiss: Ueber die Besredka und Klopstock-Neuberg Reaktion bei Tuberkulose und Tuberkuliden, Arch. f. Dermat. u. Syph. **160**:301, 1932. Blumenthal, Franz: Allgemeine Betrachtungen über die Hauttuberkulose, Ergebn. d. ges. Med. **19**:235, 1934.

5. Blumenthal, Franz: Allgemeine Betrachtungen über die Hauttuberkulose, Ergebn. d. ges. Med. **19**:235, 1934.

6. Jadassohn, J.: Importance of Immune Biologic Processes in Morphology of Skin Lesions, Arch. Dermat. & Syph. **21**:355 (March) 1930; Remarks on Tuberculin in Dermatology, Brit. J. Dermat. **41**:451 (Dec.) 1923.

7. Martenstein, H., and Noll, R.: Statistische Untersuchungen über die Tuberkulin Reaktion, Arch. f. Dermat. u. Syph. **158**:409, 1929.

than normal persons. This problem has been explained and discussed in a short paper by Sulzberger and Wise.[8]

It seems strange that in some cases in which particularly strong reactions could be expected on the basis of the clinical and of the histologic observations the reaction is negative—a fact which Jadassohn[6] explained by the theory of positive anergy; by this he meant that the allergic reaction was too turbulent, a split in the character of the tuberculin resulting so quickly that there was no visible reaction. These ideas are suggestive, but they are only a presumption. There is still discussion as to whether in some cases, especially in cases of sarcoid, the cutaneous reaction is hindered by antibodies, the so-called anticutins.

Hence one faces the fact that a high allergic state can account for a strong positive or for a negative result. This fact has greatly diminished the value of the intradermal reaction in the individual case but has led to important conclusions concerning the pathogenesis of the whole group,

TABLE 1.—*Positive Results of Intradermal Tests with Old Tuberculin*[7]

Condition	Percentage of Results with Dilution 1:5,000	1:1,000,000
No clinical signs of tuberculosis	80.0	18.5
Cutaneous tuberculosis	98.0	50.0
So-called tuberculids	93.5	23.5
1. (*a*) Rosacea-like tuberculosis	....	67.0
(*b*) Tuberculosis lichenoides		
2. (*a*) Papulonecrotic tuberculosis		
(*b* Erythema induratum	75.0	18.0
(*c*) Lupus miliaris faciei		
So-called sarcoid	32.5	11.0

particularly if one considers the histologic picture in correlation with the allergic reaction of the body.

As I have explained, the Koch bacillus may produce banal inflammation on the one hand and marked specific tuberculous reaction on the other. The first contact with the bacillus results in banal inflammation, while repeated contact results in a definite granulomatous reaction. Lymphocytes, epithelioid cells, giant cells in all possible combinations with more or less necrosis—all the transitional stages from the pure lymphocytic infiltration to the tuberculous granuloma without the preponderance of lymphocytes—are noted in the sections. There is no doubt that according to the rule of Lewandowsky the most marked tuberculoid structure occurs in subjects with the highest allergic state, and the fact that in the presence of such a marked specific tissue reaction the reaction to tuberculin may be negative shows that a negative reaction may express a high allergic state. But it seems difficult to explain by

8. Sulzberger, M., and Wise, F.: Tuberculin: Newer Dermatological Considerations and Reasons for Its More General Use in Diagnosis, M. Clin. North America **14**:1555 (May) 1931.

the theory of negative anergy or by the assumption that anticutins hinder the reaction why in cases of Boeck's sarcoid, for example, there is often a negative intradermal reaction while in cases of lichen scrofulosorum the reaction is ordinarily strongly positive. Dittrich [9] has expressed ideas suggesting a more mechanical relationship between sensitivity to tuberculin and the histologic picture. He expressed the belief that if the process is of a marked necrobiotic type the focus becomes entirely encapsulated and so the reaction to tuberculin will be negative. On the contrary, if there is an exudative phase with lymphocytic reaction, there will be hypersensitivity to tuberculin. There will be hypersensitivity to tuberculin only so long as bacilli enter the blood stream. In my opinion these conclusions do not explain the fact that in patients with sarcoid of the Boeck type the percentage of positive results is lower than in normal persons, while in those patients bacilli do not enter the blood stream. Great confusion is liable to result in the individual case, but if the problem is viewed as a whole and the reaction to tuberculin and the histologic picture are considered together, it becomes possible to draw important conclusions from the results of the quantitative intradermal test.

Before I enter into the discussion from the clinical standpoint, I wish to present a general view of the various forms of cutaneous tuberculosis. For this purpose I shall use a table given by Lewandowsky changed in some of the details. I shall begin with the most frequent clinical form, lupus vulgaris, the other forms being grouped around this as a center.

The primary ulcer and tuberculosis orificialis seu cutis propria are not listed on the chart. I prefer to consider these forms separately instead of giving them a purely artificial relation because in them the tubercle bacillus does not in a specific way form tuberculoid tissue.

Some forms, such as granuloma annulare, lupus erythematosus and lichen nitidus, are not mentioned because the question as to whether they are tuberculous is still under discussion.

Next to lupus vulgaris there are four forms which are of similar character, namely, lupus verrucosus, lupus tumidus et exulcerans, lupus miliaris faciei and lupus pernio; in the last lupus nodules cannot be clearly demonstrated. The other forms are situated even further from lupus vulgaris, giving the impression of individual features.

At the left of the chart are listed conditions characterized by lesions with local extension; at the right, conditions spreading by a hematogenous or a lymphogenous route. The first group consists of lesions degenerating into hyperkeratosis and abscess formation.

9. Dittrich, O.: Ueber den direkten Tuberkelbacillusnachweis beim Lupus pernio und beim Sarcoid Boeck, Dermat. Ztschr. **60**:395, 1931; Deutsche med. Wchnschr. **1**:996, 1929.

Among the group of disorders spreading hematogenously and lymphogenously two subgroups can be distinguished—the one exanthematous and the other tumor-like. In the latter belong erythema induratum, the sarcoid of Darier and Roussy, the miliary lupoid of Boeck and angiolupoid. The exanthematous subgroup comprises papulonecrotic tuberculosis, lichenoid tuberculosis and the more erythematous rosacea-like tuberculosis, the last preserving the character of lupus.

On the basis of the experimental observations of Koch [1] and Lewandowsky,[2] tuberculosis of the skin has been considered as a reinfection and superinfection of a person previously primarily infected by way of the respiratory or the intestinal tract. The idea that cutaneous tuberculosis was only a symptom of a generalized infection was so fascinating that the evidence of a possible primary infection of the skin was over-

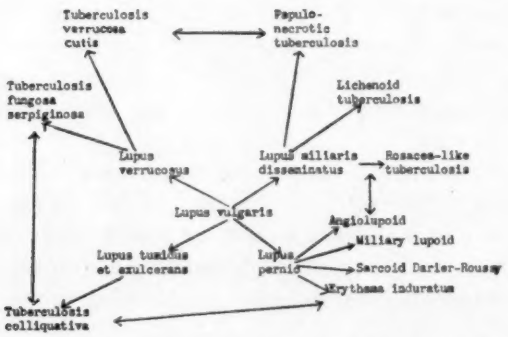

Chart 1.—Forms of cutaneous tuberculosis.

looked. It therefore took time until the ideas of Bruusgaard,[10] who emphasized the features of the primary complex of the skin, gained the approval of dermatologists.

Without doubt a primary infection cannot take place by hematogenous spread. In the so-called endogenous [11] forms of tuberculosis of the skin there is always an internal focus leading secondarily to the cutaneous

10. Bruusgaard, E.: So-Called Primary Complex of Tuberculosis of the Skin, Brit. J. Dermat. **45**:113, 1934.

11. Ghon opposed the use of the expression "endogenous tuberculosis" and proposed instead of that the term "metastatic tuberculosis." I believe that in speaking of cutaneous tuberculosis it will be better to retain the term "endogenous tuberculosis" in order to make a distinction from the exogenous form, because in cutaneous tuberculosis the metastatic focus forms the center of the disease for the remainder of the patient's life. In many cases the primary focus is not observed (Ghon: Ztschr. f. d. ges. exper. Med. **50**:27, 1926. Ghon and Kudlich: Die Eintrittspforte der Infection vom Standpunkte der pathologischen Anatomie, in Engel, S., and Pirquet, C.: Handbuch der Kindertuberkulose, Leipzig, Georg Thieme, 1930).

lesions, and therefore the skin is in an allergic state except in the rare cases of miliary tuberculosis of the skin, in which the immune reaction of the body is lacking.

The clinical features of the endogenous forms depend on the degree of the allergic state and on the localization. In an anergic state (table 2, part *A*) there develops miliary tuberculosis of the skin. In a moderately

TABLE 2.—*Observations on Hematogenous or Lymphogenous Cutaneous Tuberculosis (So-Called Endogenous Infection)* *

A. Anergic state; Pirquet reaction, —	
Many bacilli	
Tuberculosis miliaris cutis	
Rare in adults; more common in children	
B. Moderately high allergic state; Pirquet reaction, + (in various degrees)	
Few bacilli	
(a) Cutis	
1. Lupus vulgaris Localization single or regional	Pirquet reaction, +
2. Lupus postexanthematicus seu disseminatus Multiple localization all over the body	Pirquet reaction, +
3. Lupus miliaris faciei	Higher allergic state Pirquet reaction, + or — Positive anergic state
4. Rosacea-like tuberculosis Marked erythematous toxic reaction	Higher allergic state Pirquet reaction, + or — Positive anergic state
(b) Subcutis	
1. Scrofuloderm Involving the skin secondarily by contiguity leading to lupus or hematogenous spread, then to forms such as those mentioned under a (1 to 4) or under C	Pirquet reaction, from + to ++
C. High allergic state; Pirquet reaction, + or —; positive anergic state	
Bacilli rare	
(a) Cutis	
1. Lichen scrofulosorum Groups, superficial, follicular	Pirquet reaction, ++
2. Papulonecrotic tuberculosis Superficial nodules with tendency to necrosis Symmetrically localized	Pirquet reaction, ++
3. Acne scrofulosorum Deeper ulcerating form	Pirquet reaction, ++
(b) Subcutis	
1. Erythema induratum, Darier-Roussy sarcoid Deep-seated nodules often ulcerating	Pirquet reaction, + or — Positive anergic state
2. Benign miliary lupoid Deep-seated nodules and papules; no ulceration Marked tuberculoid structure	Pirquet reaction, + or — Positive anergic state
3. Angiolupoid More superficial nodules involving cutis and subcutis Often localized in face	Pirquet reaction, + or — Positive anergic state

* The observations include notes on the internal tuberculous foci and lesions progressing locally only.

high allergic state a moderate depth of localization leads to different forms of lupus (table 2, part *Ba*), while a deeper localization produces scrofuloderma (table 2, part *Bb*). If there is a greater degree of immunity the more exanthematous forms of lupus, such as lupus miliaris develop, and when a still greater degree of allergic reaction is present rosacea-like tuberculosis occurs. The transition goes toward the exanthematous forms of the highest allergic state, such as lichenoid tuberculosis and papulonecrotic tuberculosis (table 2, part *Ca*). Correspond-

ing to the latter group, but showing a deeper localization, forms of indurative tuberculosis develop, such as erythema induratum, sarcoid of Darier and Roussy, angiolupoid and the miliary lupoid of Boeck (table 2, part *Cb*).

Besides these eruptions there are hematogenous lesions lacking any specific character, as, for example, the erythema nodosum on a tuberculous basis, which does not differ in any way from the erythema nodosum following rheumatism or another infection.

In rare cases exanthematous forms also originate in a lymphogenous way and by external inoculation. Jadassohn [6] pointed out that the

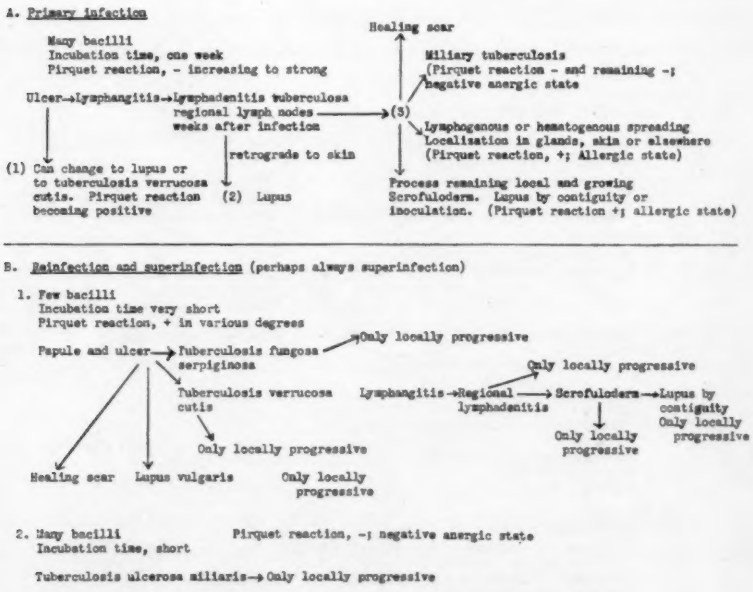
A. Primary infection
Many bacilli
Incubation time, one week
Pirquet reaction, - increasing to strong
Ulcer→Lymphangitis→Lymphadenitis tuberculosa regional lymph nodes
weeks after infection
retrograde to skin
(1) Can change to lupus or to tuberculosis verrucosa cutis. Pirquet reaction becoming positive
(2) Lupus
(3)
Healing scar
Miliary tuberculosis (Pirquet reaction - and remaining -; negative anergic state
Lymphogenous or hematogenous spreading Localization in glands, skin or elsewhere (Pirquet reaction, +; Allergic state)
Process remaining local and growing Scrofuloderm. Lupus by contiguity or inoculation. (Pirquet reaction +; allergic state)
B. Reinfection and superinfection (perhaps always superinfection)
1. Few bacilli
Incubation time very short
Pirquet reaction, + in various degrees
Papule and ulcer
Tuberculosis fungosa serpiginosa
Only locally progressive
Tuberculosis verrucosa cutis
Only locally progressive
Healing scar
Lupus vulgaris
Only locally progressive
Lymphangitis→Regional lymphadenitis
Only locally progressive
Scrofuloderm
Only locally progressive
Lupus by contiguity
Only locally progressive
2. Many bacilli
Incubation time, short
Pirquet reaction, -; negative anergic state
Tuberculosis ulcerosa miliaris→Only locally progressive

Chart 2.—Cutaneous tuberculosis by inoculation.

lymphogenous spread can occur from a deep-seated focus situated in a lower extremity. It can develop further in the area surrounding a site in which killed tubercle bacilli were injected. Occasionally I have seen such eruptions develop after subcutaneous injections of tebean, a preparation containing bacilli killed by a concentrated solution of galactose. External inoculation can also lead to lichenoid and papular eruptions; such eruptions may occur, for instance, in the area surrounding a scrofuloderm, being caused by pus running over the skin.

In contradistinction, consideration of the so-called exogenous forms originating from external inoculation brings up the question whether the lesion is due to a primary infection of the skin or to superinfection.

I shall discuss first reinfection and superinfection.

The course is the same as in endogenous infections. In a medium allergic state, one expects tuberculosis verrucosa cutis and lupus, and in older persons tuberculosis fungosa serpiginosa generally results (chart 2, part *B1*).

In the final stages of internal tuberculosis with negative anergy, tuberculosis orificialis ulcerosa originates mostly from auto-inoculation (chart 2, part *B2*). If there is a high allergic state one would expect to see only transitory forms, such as a lichenoid eruption or papules, after the Pirquet test. Part *B1* of chart 2 shows the possibilities of the development of exogenous superinfection.

Part *A* of chart 2 explains the possibilities in cases of primary infection. Bruusgaard [10] directed attention to this feature, which is one of the most discussed questions in tuberculosis of the skin. The most typical examples are the tuberculous infections following ritual circumcisions, which have been carefully studied by Wolf.[12] Krantz [13] has collected about sixty cases of this type. In my last paper I [4] referred to twenty cases in which the condition was due to other causes. In the American literature this problem is discussed by Stokes,[14] and recently Michelson [15] has reported two cases of primary infection of the skin and discussed the entire problem fully.

Carter and Smith [16] published an article entitled "Tuberculous Lymphadenitis Secondary to Inconspicuous Healed Traumatic Cutaneous Tuberculosis Lesions." All, or the majority of, the cases they reported are instances of true primary infection of the skin. Dr. Sulzberger [17] sent me a copy of a letter which he wrote to the editor of *The Journal of the American Medical Association*. In this communication he pointed out that according to his experience the paper of Carter and Smith deals with the primary complex of cutaneous tuberculosis, and he added his own observation in an interesting case.

A girl aged 4 years, some of whose relatives had tuberculosis, had a cough and was examined by the family physician. The Pirquet and the Mantoux test were

12. Wolf, E.: Ueber Circumcisionstuberkulose, Berl. klin. Wchnschr. **58**: 1531, 1921.

13. Krantz, W.: Der Tuberkulose Primärkomplex an der Haut, Zentralbl. f. Haut- u. Geschlechtskr. **39**:1, 1931.

14. Stokes, J.: Primary Inoculation Tuberculosis of the Skin with Metastasis to Regional Lymph Nodes, Am. J. M. Sc. **169**:722, 1925.

15. Michelson, H. E.: The Primary Complex of Tuberculosis of the Skin: Review of the Literature, Arch. Dermat. & Syph. **32**:588 (Oct.) 1935. Michelson, H. E., and Winer, L. H.: Tuberculoderma of the Face, ibid. **29**:251 (Feb.) 1934.

16. Carter, B. N., and Smith, J.: Tuberculous Lymphadenitis Secondary to Inconspicuous Healed Traumatic Cutaneous Tuberculous Lesions, J. A. M. A. **105**:1839 (Dec. 7) 1935.

17. Sulzberger, Marion B.: Tuberculous Chancre, J. A. M. A. **106**:314 (Jan. 25) 1936.

negative; roentgenograms of the chest showed no indication of tuberculous infection, and the cough subsided in a short while. About four months later a small chancre appeared on the right cheek, and marked indolent satellite lymphadenopathy developed. The diagnosis of syphilis, made by one physician, could not be confirmed in any way as repeated dark field examinations and Wassermann tests of the child's and of the parents' blood gave negative results. The physician then brought the child to Dr. Sulzberger. By this time the adenopathy had regressed somewhat, and a small lupus nodule had appeared at the site of the healing ulcer on the cheek. It was found that an uncle who had visited and kissed the child had open tuberculosis. A Mantoux test with 0.1 cc. of a 1:1,000,000 concentration of Koch's old tuberculin now gave a strongly positive reaction, while the roentgenogram of the lungs and all other examinations still failed to disclose evidence of tuberculosis. It was proved that the primary complex in the skin had brought about the cutaneous hypersensitivity and that the cutaneous allergy had presumably led to the formation of the lupus nodule at the site of inoculation.

The manifestations in this case are characteristic. There were an ulcer with many bacilli, lymphangitis and lymphadenitis and a negative intradermal reaction shortly before the lesion started, the reaction becoming positive later—all the signs demonstrating a primary character of the complex.

From the paucity of cases in the literature one may suppose that tuberculosis of the skin developing locally from the primary lesion is extremely rare and that reinfection and superinfection are the common genesis. But is this really true?

In adults there is no doubt that tuberculosis of the skin due to inoculation develops nearly always as reinfection, and in the rare cases in which the condition is described as a primary complex in adults it may be suspected of being a pseudoprimary complex. In fact, lymphangitis and regional lymphadenitis can develop from tuberculosis cutis verrucosa if the infecting bacilli by quantity or virulence overcome the immune allergic state. Practically the situation is similar to that which exists in cases of true primary complex. Volk [18] compared directly the tuberculosis verrucosa cutis associated with lymphangitis and lymphadenitis with inoculation tuberculosis of guinea-pigs. Cases of superinfection in which the picture was that of a primary complex have been described by Jadassohn [6] and by Rochat.[19]

In children the problem is different. It is universally known that in the majority of cases lupus appears during childhood. This fact has been explained by the susceptibility of children's skin to tuberculosis, if there is a secondary spread from an internal focus. I feel that it is much more probable that in the great majority of cases of lupus in

18. Volk, R.: Tuberkulose der Haut, in Jadassohn, J.: Handbuch der Haut- und Geschlechtskrankheiten, Berlin, Julius Springer, 1931, vol. 10, pt. 1.

19. Rochat: Ann. de dermat. **10**:369, 1929.

which there are not many disseminated lesions the condition is caused by external inoculation rather than by hematogenous infection, and doubtless the postexanthematous lupus is spread by hematogenous or lymphogenous channels. Certainly, the possibility of external inoculation is great in children. In fact, the inoculation in the skin of children plays a great rôle in the genesis of lupus; it can be recognized in cases in which the lupus has been caused by pus from scrofuloderma running over the skin. Furthermore, every one who has observed many cases of cutaneous tuberculosis has noted that lupus can develop as a result of trauma associated with infection. Volk [18] gave some examples of this in his article.

Wile [20] and his associates in the clinic at Ann Arbor, Mich., have noted two cases which fit the problem under consideration. In the first, a sailor engaged in a street brawl received a bite on the cheek, and subsequently a typical lesion of lupus vulgaris appeared on the site. In the second case a man was bitten on the nose. Some years later typical lupus vulgaris nodules were seen in that location.

In the discussion on my paper at the meeting of the Detroit Dermatological Society Dr. Keim pointed out that in China, where lupus vulgaris is a common disease, the lupus is most frequently seen on the buttocks. He expressed the belief that this localization is due to the habit of the Chinese children to squat in the streets, thus coming in contact with sputum and other infecting material.

Attempts have been made to explain lesions on the knees of creeping infants and lesions on the lobes of ears which have been pierced by rings as hematogenous infections localized in a *locus minoris resistentiae,* and certainly such events occur, as I described in my last paper.[3] In some cases of lupus postexanthematicus these localizations were noted, but in the majority of cases it seems much more probable that the infection is due to contact inoculation plus the associated trauma. So I think that in a high percentage, perhaps in the majority, of cases lupus in children is due to external inoculation.

In all these cases of inoculation during childhood there is still the question of whether the condition is a primary infection or a superinfection. This is easily answered if the typical feature of the primary complex is present.

In practice, it is difficult to state definitely whether a lesion is due to a primary infection, because ordinarily the lesion is seen too late. By the time the patient is seen the Pirquet reaction has become positive, and owing to allergic factors the clinical picture often has changed also. When the patient presents himself for clinical observation there is only

20. Wile, U. J.: Personal communications to the author.

the feature of lupus or tuberculosis verrucosa cutis, and it is impossible to decide whether there was a primary inoculation or a reinfection (chart 2, part *A1*). That such metamorphoses of primary ulcers into lupus vulgaris or into tuberculosis verrucosa cutis can occur is demonstrated by the observations of Volk,[18] Jadassohn,[6] Dittrich[9] and others, by a recent observation of Michelson[15] and by Sulzberger's[17] case.

As is explained further by chart 2 (parts *A2* and *A3*), the lymphadenitis following the primary ulcer can still lead to lupus vulgaris by lymphogenous or hematogenous spread or by contiguity. It must be remembered that the primary complex is not as malignant as it was formerly believed to be. Michelson[15] discussed in detail the fact that the prognosis is not always unfavorable in cases of primary infection. Duken[21] and other pediatricians emphasized the same idea. In only 30 per cent of the cases of primary infection occurring after circumcision is the disease fatal, and certainly in the great majority of cases of primary infection of the lungs and intestines the course is favorable. Man is not without protection against primary infection. The quantity and virulence of the bacilli, on the one hand, and the natural disposition of the patient, on the other, are the factors which decide whether there is time enough for protective forces to develop or whether the patient will succumb to the infection.

Of probably great frequency is the development of lupus from the lymphadenitis following the primary lesion by way of the lymphatics. This is observed in the frequent localization of lupus in children on the skin overlying the maxillary region. These patients frequently have a tuberculous lesion in the nasal antrum probably caused by trauma incident to picking the nose. That there is a primary inoculation can be concluded from the lymphangitis and lymphadenitis of a small gland situated under the skin of the cheek. The infection of the skin follows by retrograde lymphogenous spread. Owing to this mechanism, recurrence follows local excision of the lupus lesion unless the infected glands are removed or the infection is cured in other ways, as, for example, by roentgen irradiation. The course consists probably of a primary infection, subsequent lymphangitis and lymphadenitis and finally lupus vulgaris.

The idea of Gerber[22] that the mucous membrane of the nose and the oral cavity are highly protected against the tuberculous infection is true only of infection by inhalation. In traumatic inoculation the conditions are quite different, and the infection occurs easily. Cases of primary infection of the internal portions of the nose have been described by

21. Duken: Ztschr. f. Kinderh. **55**:687, 1933.

22. Gerber: Latente und aszendierende Tuberkulose in den Luftwegen, Arch. f. Laryng. u. Rhin. **32**:449, 1920.

Ghon and Terplan,[23] and by Ruf.[24] Wichmann[25] made an analysis of one hundred cases of infection of the nasal mucous membrane. Certainly in the majority of these cases the condition could not be considered as primary infection but rather as inoculation, and the disease did not spread by metastasis from an internal focus, as demonstrated by the localization and the subsequent course.

According to these facts the primary complex may not be rare but may be a common origin of lupus vulgaris in children.

CONCLUSIONS

It is evident that cutaneous tuberculosis in its various forms reflects all the states of immune allergic reaction of the body, beginning with primary infection, in which case the patient is nearly without protection, and ending in the high allergic tissue reaction of the so-called tuberculids.

In cases of primary infection the outcome depends on the virulence and number of the infecting bacilli and on natural resistance, i. e., on whether specific protective forces have time to develop before the infection gains the upper hand.

In cases of reinfection and superinfection the clinical feature depends mainly on the immune allergic state. Besides this factor the localization, the route of infection and the type, number and virulence of the infecting bacilli are important. All these factors depend one on the other; for example, the route of infection accounts for a difference in the number of the infecting bacilli. In cases of inoculation from outside there can be a massive infection; in cases of hematogenous spread there will be only a few infectious bacilli in the individual focus. All factors are overshadowed in importance by the specific reaction of the organism. But this immune allergic state can change, and therefore one often sees a mixture of different clinical forms or several forms following one another.

Finally I wish to state why it has taken such a long time for the idea of the primary complex to receive due consideration in dermatology. As I recall, the primary complex was first described as occurring in the skin after circumcision in children. But this feature is only exceptionally the starting point of an internal tuberculosis, and because of this it was believed that the skin was of no importance as a primary localization of tuberculosis. The fact that in cases of cutaneous tuberculosis the circumstances are different was overlooked. Certainly a primary infec-

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tion of the skin is a rare event as compared with primary infection of the respiratory or intestinal tract. It is not necessary to search for the reason for this fact in a peculiar resistance of the skin. The possibilities of pulmonary and intestinal infection are much greater than the possibility of cutaneous infection, because, as was demonstrated by Herbert Koch, the tubercle bacillus can infect the skin only after injury by trauma. Therefore, in the majority of cases a pulmonary or an intestinal infection occurs before there is occasion for a primary infection of the skin to take place.

If one considers that in many cases lupus of children starts from a primary cutaneous infection, it becomes evident that the number of cases of lupus depends on the frequency of the primary complex in the skin. These circumstances perhaps explain why in some countries lupus vulgaris is relatively rare while hematogenous forms of tuberculosis are as frequent as elsewhere.

SUMMARY

I should like to demonstrate that all forms of cutaneous tuberculosis depend on the state of immune or allergic reactions and that the degree of allergy determines the clinical type of tuberculosis, as modified by the localization and route of infection. Of course, the virulence, quantity and type of the infecting bacilli are also important factors. But in all cases of tuberculosis of the skin the features are much more often determined by the reaction of the person infected than by the variability of the infecting organism.

Lupus, the most common form of cutaneous tuberculosis, has always presented the question as to whether it is endogenous or exogenous. However, it is certain that in a large number of cases tuberculosis of the skin is of endogenous origin and that many of the exogenous types of infection are superinfection. In adults the primary complex is extremely rare in the development of cutaneous tuberculosis. In children, however, primary infection in the skin may prove to be much more frequent than it has been considered until now.

PSORIASIS

A STATISTICAL STUDY OF TWO HUNDRED AND THIRTY-ONE CASES

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Psoriasis is relatively common among cutaneous diseases. Many general statements concerning it appear in the various dermatologic texts, but there is little statistical evidence in regard to this disease. Schamberg [1] in 1924 supplied some definite data on a large group of cases but gave information only in regard to the age and sex of the patient, the age at onset and the familial incidence. Aside from this contribution there are in the main only general impressions gathered from small series of cases, and detailed figures in support of the statements made are lacking. The cases of psoriasis observed in the last few years at the dermatologic clinic of the Massachusetts General Hospital have been studied with a view to supplying more definite evidence concerning these impressions. For the sake of brevity the data will be presented as far as possible in tabular form.

INCIDENCE

Table 1 gives the occurrence of psoriasis in this part of the country, both as to incidence among general diseases and in relation to other cutaneous conditions. These figures are taken from the outpatient department only.

In the past two years a more careful survey has been made of 231 cases of psoriasis, and the remaining data given in this paper are concerned with these cases alone. No reports of laboratory procedures of any sort are included herein. No laboratory studies were made except when especially indicated for diagnostic or for therapeutic purposes. Information based on chemical examination of the blood, examination of the urine and hematologic and histologic studies has been amply covered in previous publications by competent authors.

From the Department of Dermatology and Syphilology of the Massachusetts General Hospital, C. Guy Lane, M.D., Chief.

1. Schamberg, Jay F.: The Known and Unknown About Psoriasis, J. A. M. A. **83**:1211 (Oct. 18) 1924.

AGE AND SEX OF PATIENTS AND DURATION OF THE DISEASE

Table 2 shows the occurrence of psoriasis as to the age and sex of the patients and the duration of the disease in the present series.

The youngest patient in the group was aged 6 years; the oldest was 82. The shortest duration of the disease was three months; the longest time that the condition had been present was fifty-five years. The earliest age at onset was 2 years; the latest was 73.

TABLE 1.—*Incidence of Psoriasis*

Year	Total Number of New Admissions	Number of New Cases of Cutaneous Disorders *	New Cases of Psoriasis		
			Number	Percentage Based on Total Admissions	Percentage Based on Cases of Cutaneous Disorders
1931	43,259.0	3,783.0	223	0.52	5.9
1932	44,487.0	3,954.0	192	0.43	4.9
1933	42,818.0	3,935.0	233	0.55	5.9
1934	38,962.0	3,302.0	221	0.57	6.7
1935	38,088.0	3,185.0	193	0.51	6.1
Average	41,522.8	3,631.8	212.4	0.51	5.9

* The figures in this column do not include cases of syphilis.

TABLE 2.—*Age and Sex of Patients and Duration of the Disease*

Average age	36.6 years
Sex: Male	108 cases (46.8%)
Female	123 cases (53.2%)
Average duration	15.8 years
Average age at onset	20.8 years

TABLE 3.—*Incidence of Psoriasis as to Race and Nationality*

	Aryan	Race		
		Semitic	Negro	Other
Number of cases	202	28	1	0
Percentage	87.4	12.2	0.4	0

	American Born	Foreign Born
Number of cases	143	88
Percentage	61.9	38.1

RACE AND NATIONALITY

Table 3 reveals the occurrence as to race and nationality among the 231 patients.

Nationality is not of course truly represented by the percentage given in table 3, as many of the American-born patients were of foreign parentage. The incidence of the cases of psoriasis in foreign-born patients according to nationality was as follows: Irish, 18; Italian, 14;

English, 12; Canadian, Scotch, Russian and Armenian, 7 each. The American-born group included one full-blooded Negro, that being the only unusual feature of this part of the figures.

REMISSIONS

The number of patients who had complete remissions at any time was 64, of a total of 130. The distribution of remissions among these patients is listed in table 4.

In the other 167 patients, or 72.3 per cent, the psoriasis had never cleared at any time. In only 2 of those considered in table 4 had there been spontaneous remissions beyond the arbitrary time limit of three months following the termination of any course of treatment, and each

TABLE 4.—*Incidence of Remissions*

Number of Remissions	One	Two	Three	Over 3	Total
Number of patients	38.0	11.0	7.0	8.0	64.0
Percentage	16.5	4.7	3.0	3.5	27.7
Total number of remissions	130.0	Average length 3.1 months			

TABLE 5.—*Regions Involved by Psoriasis*

Area	Number of Cases	Percentage
Arms	223	96.5
Scalp	212	91.8
Legs	208	90.1
Trunk	197	85.3
Finger-nails	115	49.8
Face	106	45.9
Toe-nails	63	27.3
Finger-nails and toe-nails	63	27.3
Palms	20	8.7
Penis	7	3.0
Soles	7	3.0
Palms and soles	6	2.6
Vulva	2	0.8

had had a remission on one occasion only. The length of remissions varied from one month to twenty years, the average duration being three and one-tenth months. These remissions were spread over a period the average duration of which was fifteen and eight-tenths years per case. If the 130 remissions were evenly divided among the 64 patients, there would be roughly 2 remissions for each patient, or 1 occurring every seven and nine-tenths psoriasis years. This is not as frequent an incidence as it would at first appear. The factors influencing remissions will be discussed later.

EXTENT OF INVOLVEMENT

In tabulating the areas affected by the lesions the amount of the body surface covered was not included, as this varies from time to time in each patient. The regions involved are given in table 5.

In view of the classic distribution of psoriasis, it is somewhat surprising to see that the scalp was involved more often than either the legs or the trunk. The torso itself also showed a higher percentage of involvement than is usually realized. The back was more often involved than the ventral aspect of the trunk, the incidence of involvement being 61.5 and 48.5 per cent, respectively, and the sacral area being the site of choice. All cases of palmar and plantar involvement were checked for the possibility of fungous infection, and syphilis was ruled out by serologic tests. In 14 of the 20 patients in whom the palms were invaded there was no plantar involvement. Only 1 patient presented lesions on the soles while the palms were unaffected. Involvement of the genitalia (external) was characteristic and striking when present. No lesions of the oral or other mucous membrane were discovered. In approximately one half of all the patients there were characteristic changes in the finger-nails. All the cases in which fungous infections or other conditions of doubtful identity could not be definitely ruled out were excluded. In a little over one fourth of the entire series there was involvement of the toe-nails. No case was observed in which changes in the toe-nails were unaccompanied by lesions of the finger-nails.

In dividing the cases according to the types of lesions encountered it was found that in 195, or 84.4 per cent, they were of the usual guttate, nummular, circinate, gyrate, rupoid or diffuse type with plaque formation. In the remaining cases they were classified as follows: lesions of seborrheic type, 14 cases; of eczematoid type, 12, and of juvenile type, 10. There were no lesions in the exfoliative state at the time of examination. The group with palmar and plantar involvement included 1 patient exhibiting pustular lesions.

SYMPTOMS

Psoriasis is customarily considered to be an asymptomatic condition from the subjective standpoint. Pruritus, however, has been observed to be an occasional complaint, and in this series it was noted in 76, or 32.9 per cent, of the patients—or in almost one third of the series. Some patients characterized the disturbance as burning rather than as itching. Warm weather seemed to enhance these symptoms when they were bothersome, and similarly, when the patients became overheated for any reason and perspiration was increased the pruritus was more severe.

Bathing produced a temporary improvement in the psoriasis from either the subjective or the objective standpoint in 41, or 17.7 per cent, of the total number of patients. It had exactly the opposite effect in 74, or 32 per cent. The remaining 116, or 50.2 per cent, experienced negligible influence from soap and water.

Arthritis, or the so-called psoriatic arthropathy, will be considered under another heading.

NUTRITION AND DIET

The status of nutrition of the individual patient was estimated from general appearance as well as by comparison with tables giving standards of height and weight. Information as to diet was more difficult to obtain with accuracy, and therefore the data cannot be taken as absolutely correct.

Nutrition and the type of diet customarily followed are given in table 6.

Table 6 shows that almost three fifths of these patients were of average nutritional status. Nearly one third, however, were obese—as compared with about one twentieth that were undernourished—so that on the whole it would seem that excess weight is more of a detrimental factor than asthenia.

The dietary statistics were estimated by relying on the statements of the patients and on answers obtained to direct questioning as to the

TABLE 6.—*Nutrition and Type of Diet of Patients with Psoriasis*

Type	Number of Patients	Percentage
Nutrition		
Overweight	82	35.5
Average weight	136	58.9
Underweight	13	5.6
Total	231	100.0
Diet		
High carbohydrate	73	31.6
Low carbohydrate	19	8.2
High protein	15	6.5
Low protein	19	8.2
High fat	15	6.5
Low fat	8	3.5
Balanced	82	35.5
Total	231	100.0

types of food ingested. Only about one third of the patients seemed to follow a well balanced diet. The preponderance of high carbohydrate intake over the other types of foods may perhaps be attributed to the fact that patients who come to a clinic are likely to be by necessity dependent on the cheaper foods for subsistence. As to the incidence of low as compared to high protein intake, a somewhat higher number of patients had a low intake. This is at variance with the regimen suggested by Schamberg some years ago, as he advocated a low nitrogen intake as beneficial. Data on the fat component may perhaps be less reliable than that on the other items, as practically every patient denies taking a large amount of fat when questioned either directly or indirectly. But nevertheless almost two times as many seemed to be taking large amounts as small quantities of fat. Recent reports from German observers indicate that a high fat intake is inimical to recovery from psoriasis; hence these figures may eventually be shown to be indicative of a truism in spite of the low number involved.

SEASONAL VARIATION

That it is customary for most psoriatic persons to show improvement in the warmer season of the year is a commonplace statement. This is borne out in this series, as 139, or 60.2 per cent, of the patients reported recession of the extent of their eruption in the summer. Such a circumstance applied as often in regard to pure seasonal conditions as to exposure to the sun's rays. One in each 4 of these patients, however, was entirely unaffected by climatic variations. On the other end of the scale the surprising number of 33 patients, 14.3 per cent, or 1 in every 7, were adversely affected by summer weather and by exposure to the sun's rays.

FAMILIAL INCIDENCE

The possibility of hereditary or familial occurrence playing an important rôle in the pathogenesis of psoriasis has long been debated from both sides. Table 7 lists the incidence of these factors in our series.

TABLE 7.—*Familial Incidence of Psoriasis*

Relation Affected	Number of Patients	Percentage of Total Number of Patients
Parent	21	9.9
Siblings	27	11.7
Other relatives	18	7.8
Total	61	26.4

In no instance was there more than one parent affected. In the group designated "siblings" 25 patients had 1 brother or 1 sister with psoriasis; in each of the other 2 groups 2 siblings were afflicted. More distant relatives were found to have psoriasis, the incidence of involvement being as follows: 1 relative in 14 instances; 2 in 3 cases, and 3 in 1 case. In 3 cases in which siblings were affected there was overlapping with the other groups, but each time a total of only 2 relatives were affected. In all, there were 21 cases in which multiple occurrences were present in the family tree. These figures do not seem high enough to indicate any reliably regular hereditary or familial factor. It is of interest also that in addition to the aforementioned data there were 3 instances wherein both the husband and the wife were affected—none of these pairs had children.

ASSOCIATED FINDINGS

In surveying the general condition of the patients in this series we attempted to determine the diseases that had occurred during the existence of the psoriasis as well as the abnormalities present at the time

of the study. These findings are given in table 8. The diseases suffered before the onset of the cutaneous malady are listed subsequently.

There were 24 other conditions that occurred in association with the psoriasis; all of these occurred less than 5 times each, and undoubtedly they were of little or no significance. There was of course ample overlapping in incidence throughout. Of the 74 patients with arthritis, only 14 stated that there was direct association with the psoriasis, either in regard to the simultaneous onset of the conditions or to synchronous aggravation of symptoms. These patients' arthritis may be classed with the so-called psoriatic arthropathies.

The conditions to which patients directly attributed their psoriasis, or during the course of which it began, were as follows: encephalitis, influenza, typhoid, epidemic parotitis, erysipelas, sycosis vulgaris, arsenical dermatitis, epilepsy, cervical adenitis, constipation and alcoholism. In addition, 6 females ascribed the origin of their psoriasis to the onset

TABLE 8.—*Conditions Other than Psoriasis Affecting Patients in This Series*

Condition	Number of Patients	Percentage
Dental caries	98	42.4
Arthritis	74	32.0
Infected tonsils	56	24.2
Gastro-intestinal disturbances	50	21.6
Gonorrhea	33	14.3
Disease of the gallbladder	17	7.4
Influenza	14	6.1
Appendicitis	10	4.3
Sinusitis	9	3.9

of menstruation. This paragraph is, of course, inserted as a matter of interest, as little credence can be given to such information.

The usual diseases of childhood being excluded, the ailments most frequently occurring in the past history, that is, before the onset of the psoriasis, in this group were as follows: scarlet fever, 11 times; influenza, 8 times; diphtheria, 6 times; appendicitis and otitis media, 5 times each. Twenty-five other diseases were listed less than 5 times each. Two patients were found to have syphilis; both had acquired it after the psoriasis began.

RESPONSE TO THERAPY

The types of treatment each patient had undergone throughout the duration of the psoriasis were ascertained, and as far as possible the relative effectiveness of each treatment was determined. These data are given in table 9. The estimated causes of the remissions are recorded in a separate column.

In general, the two columns correspond well. Considering the group treated with arsenic, however, it is seen that the number of patients

showing remissions as a result of its use is considerably less than that of persons who stated that it had been their best treatment. Solution of potassium arsenite was the only form of arsenic employed in all these cases. Deleterious effects from its use will be discussed later. Among the patients stating that sulfur was their best mode of therapy, there was 1 for whom the intravenous method of administration had been used. All the patients who were treated by dietary regimens were handled by another member of the staff. Low carbohydrate and low fat intake were combined to secure the optimum of weight regulation for each patient and satisfactory bowel elimination.

TABLE 9.—*Data on Therapy*

Type of Therapy	130 Remissions (64 Patients)	Best Therapy (Other 167 Patients)
Sulfur	22	29
Tars	19	21
Sunshine	14	17
Ultraviolet radiation	12	14
Chrysarobin	10	15
Ammoniated mercury	9	14
Arsenic	6	17
Removal of focal infection	3	0
Diet	2	4
Febrile disease	1	1
Autohemotherapy	0	2
Gold preparation	0	1
Proprietary remedies	3	4
Combinations of treatments	24	26
Totals	125*	165†

* As stated earlier, 2 remissions occurred spontaneously. In addition, 3 patients stated that pregnancy brought about complete remissions.

† Two patients claimed that they had found no therapy of any kind that had ever caused any sustained beneficial effect.

TABLE 10.—*Influence of Pregnancy on Psoriasis*

Effect	Number of Patients	Number of Pregnancies
Improvement	15	33
No change	41	147
Exacerbation	7	24

EFFECT OF PREGNANCY

Sixty-three of the 123 females had been pregnant one or more times since the onset of their psoriasis, the total number of gestations being 204. The influence exerted by this phenomenon is shown in table 10.

The figures given in table 10 indicate effects during the gravid state and within six months of its termination. Only pregnancies terminating at full term, normal nonoperative deliveries and uneventful puerperiums were included. It is apparent that the greater number of women expe-

rienced no appreciable influence from their pregnancies, although twice as many were favorably affected as unfavorably. It was found that most of those having noticed beneficial results based the observation on their first pregnancy, but this was no indication that successive gestations would achieve the same result. Four patients stated that their psoriasis first appeared during a pregnancy; in 2 it developed in the first and in 1 each in the second and third. As previously mentioned, 3 patients experienced a complete remission during a pregnancy.

COMPLICATIONS

A true and complete exfoliative dermatitis had been experienced at a previous time by 3 patients. Each exfoliation included loss of the nails, but in none was there appreciable accompanying alopecia. The duration in these instances varied from three to eight months and necessitated hospitalization during the acute stage. In 1 patient the exfoliation was known to have directly followed the use of chrysarobin ointment which brought about intense inflammation and rapid spreading of the psoriasis. In another a history was obtained of the use of solution of potassium arsenite for a period of two and one-half months immediately preceding the onset of the generalized spread of the eruption. This patient had no suspicion of the possibility of the part played by the drug and stated that she would have taken it again had her physician not advised against it, as before the sudden exfoliation occurred she had been steadily improving. In the third the exfoliation was, as far as could be determined from the information obtained, spontaneous and, strikingly, it lasted the longest.

Untoward reactions to the use of arsenic, both immediate and delayed, were of sufficient frequency to attract considerable attention. Altogether, a total of 44 patients, 18.6 per cent of the series, stated that they had used solution of potassium arsenite at some time or other since the onset of their psoriasis. Quite a few others had taken "drops" of unknown nature, but these patients were excluded since no definite assurance could be obtained that the preparation which they had taken contained arsenic. Of the 44 patients actually known to have taken solution of potassium arsenite, there were, in addition to the aforementioned 6 who experienced complete remissions and to the 17 who reported it to be their best therapy, another 6 who had had some slight beneficial results. Seven more stated that no effects whatever had resulted. This leaves 7 patients, or one sixth of the 44, who had immediate reactions of intolerance such as nausea, vomiting, salivation, diarrhea or edema of the face and hands. Of the patients who had experienced no unfortunate symptoms during the ingestion of the drug, late deleterious effects were discovered in 9. These effects were as follows: multiple keratoses

of the face or trunk in 5 patients, keratoses of the palms and soles in 3, and multiple superficial epitheliomas of the trunk in 1. We did not attempt to demonstrate arsenic in the tissue in these patients. There were, then, 7 patients who had immediate signs of intolerance, 1 who had experienced exfoliative dermatitis and 9 who exhibited late lesions attributable to arsenic—a total of 17 patients who were detrimentally affected by its use. This is 38.6 per cent of the 44 patients who used the drug, as against 52.3 per cent (23 patients) who showed good results at the time. This seems to be an undesirably high rate of untoward effects.

Other notable observations on the skin in this series which cannot be ascribed directly to either the psoriasis or the medication used for its relief were as follows: Bowen's disease, 2 cases (with histologic study), and multiple superficial epitheliomas and multiple keratoses, 1 case each. No history suggestive of the previous administration of arsenic could be obtained in these cases. It is impossible to state whether or not the concomitant occurrence of these conditions with psoriasis is of significance.

SUMMARY

We have presented a report on 231 cases of psoriasis studied statistically as to the following factors: incidence, age and sex of the patient, duration of the disease, age at onset, race, nationality, remissions, extent of involvement, symptoms, nutrition, diet, seasonal variations, family incidence, associated diseases or foci of infection, response to various types of therapy, effects of pregnancy and complications. These findings are given as far as possible in tabular form, and we hope that they may be of value as a norm in further studies.

It is worth mentioning that in this series: 1. The incidence of psoriasis among patients attending a general clinic was about 0.5 per cent and approximately 6 per cent of the total dermatologic cases.

2. The average age at onset was roughly 20 years.

3. Remissions with all types of treatment occurred in only 16.5 per cent of the cases.

4. The areas most frequently involved were in the following order: the arms, the scalp, the legs, the trunk, the finger-nails and the face.

5. Pruritus was present in about 33 per cent of the patients.

6. Approximately five times as many patients were overweight than were below average weight for their age and height.

7. Slightly more than 60 per cent improved in the summer, whereas a little over 14 per cent were adversely affected by warm weather and exposure to the sun's rays.

8. There was a familial incidence in roughly 26 per cent of the cases.

9. The five best modes of therapy were all external measures, being as follows: administration of sulfur, of tar derivatives, of chrysarobin and of ammoniated mercury, exposure to the sun's rays and ultraviolet radiation.

10. In approximately 72 per cent of 204 pregnancies there was no definite effect on the psoriasis.

11. There were 44 patients who were known definitely to have taken solution of potassium arsenite in the past. Of these, almost 40 per cent had had either immediate reactions of intolerance or were found at the time of the study to exhibit late unfortunate sequelae of the use of arsenic. This appears to be a rather high incidence of untoward effects in view of the amount of benefit to be derived from the use of arsenic.

PERSISTENT SINUS TRACTS OF DENTAL ORIGIN

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The purpose of this paper is to call attention to a condition well known to members of the dental profession and to oral surgeons but apparently not readily recognized by dermatologists. As far as I can ascertain there is nothing in the dermatologic literature regarding this subject. I refer to a peculiar but striking granulomatous lesion which occurs about the gums, the face and the neck and which represents one end of a persistent sinus tract. The other end of this sinus usually originates in the apical abscess of a tooth but may take its origin in any osteomyelitic process of the jaw.

REPORT OF CASES

CASE 1.—J. C., aged 20, an American of Czechoslovakian descent, was first seen at the Santa Rita Clinic on Feb. 1, 1934. He complained of a lesion on the chin of two years' duration. He stated that the condition began with a swelling of the chin which at the time he regarded as a boil or an abscess. This swelling was not particularly painful, but apparently it did come to a head, and it was lanced by a physician. The incision showed no tendency to heal, and the patient consulted another physician, who hospitalized him and attempted to remove the lesion surgically. After it was removed the chin remained clear for about two weeks, and then a new lesion developed at the site of the previous one. Silver nitrate stick was applied twice weekly for about two months without result. The patient further stated that about once a week the lesion on the chin would discharge a small amount of seropurulent material. Once or twice there had been a discharge of similar material in the mouth in the region of the left lower incisor tooth. The patient stated that this tooth had been "cracked" for a long time.

On examination the center of the tip of the chin presented a red granulomatous lesion the size of a large pea (fig. 1). There was a thin epidermal covering over this. The edges of the diseased area were noticeably depressed below the level of the surrounding skin, and the entire involved area was immovable and firmly adherent to the underlying tissue. With a dull probe the thin epidermal covering was pierced, and small amounts of seropus were expressed from the lesion. Further probing brought out the fact that a sinus tract existed along which a probe could be passed from the tip of the chin to the apex of the lower left incisor tooth. This sinus was about ¾ inch (1.9 cm.) in length.

Roentgenologic studies by Drs. Crossan and Goin revealed a definite periapical abscess with destruction of the bone about the left lower incisor tooth. Figure 2 shows the probe extending from the sinus opening on the chin to the periapical abscess.

Read at the Fifty-Ninth Annual Meeting of the American Dermatological Association, Inc., Swampscott, Mass., June 4, 1936.

Seropurulent material was expressed from the granulomatous lesion of the chin, and after it had been soaked in 40 per cent sodium hydroxide the material was examined microscopically. Examination revealed some organisms apparently belonging to the actinomycosis group. Anaerobic cultures of this seropus were also made on Sabouraud's medium.

The involved left lateral incisor tooth was removed by Dr. Guy Van Buskirk, and the abscess was opened and its wall curetted. Cultures from the root of

Fig. 1 (case 1).—Persistent sinus tract with granulomatous lesion of the chin of two years' duration. Note the puckering of the skin about the entire periphery of the lesion.

Fig. 2 (case 1).—Dental roentgenogram showing a silver probe extending from the sinus opening on the chin to a periapical abscess.

the removed tooth and from the abscess wall were made on blood agar and on Petroff's and Sabouraud's mediums and planted aerobically. In some way the cultures were lost. This is probably unimportant, as the causative organisms are generally streptococci or staphylococci, particularly the former.

At the time of writing the lesion on the chin has entirely disappeared (fig. 3), and the sinus tract has closed. The only evidence of the once unsightly granuloma is a slight depression in the dimple of the chin about ¼ inch (0.64 cm.) wide.

CASE 2.—A man, aged 36, was referred by Dr. Roy Cummings and was first seen on Feb. 7, 1936, complaining of a lesion on the left side of the face of about five weeks' duration. The patient stated that about six weeks previously a swelling appeared on the left side of the jaw. He thought the condition was a boil and applied hot compresses of magnesium sulfate which had no effect on the swelling. About four weeks later he consulted a physician, who diagnosed the condition as a cyst and performed an operation. Some tissue was removed, and a couple of stitches were inserted, which were removed one week later by the nurse, the physician having died suddenly in the meantime. Some pus seemed to exude from the lesion for several days after the removal of the stitches, and a few days before I first saw the patient a warty projection the size of a small pea appeared at the site of the operative wound. This lesion had caused no symptoms, and there had been no bleeding.

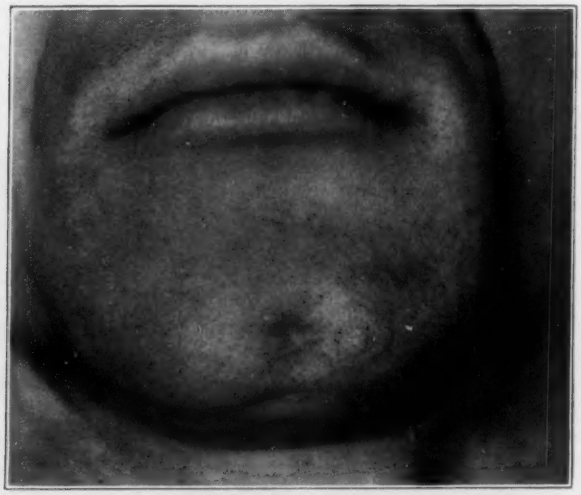

Fig. 3 (case 1).—End-result obtained by removing the abscessed tooth and curetting the abscess cavity. (Photograph through the courtesy of Drs. Ruben Nomland and J. H. Mitchell.)

Examination showed on the left cheek, just anterior to the angle of the jaw, a typical granulomatous lesion of a persistent sinus tract. The characteristic dimpling depression about the edge of the lesion showed it to be fixed to the periosteum.

A silver probe inserted into the granulomatous mass passed inward and upward for approximately 1 inch (2.5 cm.) before meeting resistance and causing considerable pain. Examination of the mouth disclosed the entire absence of teeth, and the patient stated that all his teeth had been removed three years previously because of extensive and severe pyorrhea. In view of the knowledge obtained from the study of case 1, it was thought that some fragment of root was probably present, and dental roentgenograms were ordered. These showed entirely normal conditions. Finally a full roentgenogram of the left portion of the lower jaw was made by Drs. Crossan and Goin. Two pictures were taken: before taking one a small flexible silver wire was inserted into the sinus tract; the

other roentgenogram was an ordinary flat plate. They revealed that the sinus tract extended to the region of the first molar tooth and in addition showed a fuzziness and irregular density of the alveolar ridge. Because of these findings Dr. Lowell S. Goin made a diagnosis of probable syphilitic osteitis and periostitis. This was confirmed by a 4 plus reaction to the Wassermann, the Kahn and the Kline test.

The patient was given bismuth therapy, and the sinus tract has apparently closed, there having been no discharge from the cheek after the second intramuscular injection of bismuth.

CASE 3.—A man aged 34 was first seen on March 26, 1936, in the special clinic for patients with syphilis of the White Memorial Hospital. In the course of a routine examination of the mouth a granulomatous lesion the size of the head of a small pin was revealed on the labial aspect of the lower gum. Questioning brought forth the fact that the patient had been aware of its presence for over three months and that there was an occasional discharge of a small amount of seropurulent material. A fine horse hair suture could be passed into the sinus tract which led to the apex of the right lower incisor tooth. The three central lower teeth were devitalized, and an apical abscess was present on each. The cause of the devitalization could be traced back to about ten years previously, when the patient noticed marked looseness of these three teeth immediately after a tonsillectomy during which these three teeth were injured by a mouth gag. The patient had a 4 plus Wassermann reaction, which in this case was probably of no significance in the etiology of the persistent sinus tract.

COMMENT

No mention of this condition, which is apparently fairly common, occurs in either dermatologic literature or dermatologic textbooks. Moorehead,[1] however, in discussing periodontitis and alveolar abscess, mentioned that such an abscess may open into the maxillary sinus, the floor of the nose or the floor of the mouth and that if the lower jaw is involved the pus may travel along the platysma muscle and break through at the shoulder. He mentioned a case in which the pus traveled down to the mammary gland and broke through in that region.

Goadby[2] remarked that in a large number of cases of acute alveolar abscess a chronic sinus remains. He said:

> In a proportion of untreated cases the abscess may discharge through the cheek, especially when it arises from one of the lower molars, where it tends to track downwards. In such cases a sinus may be formed either above or below the mandible. When these are neglected the sinus may develop multiple openings and the overlying skin become burrowed in many directions.

1. Moorehead, Frederick B., and Dewy, Kaethe: Pathology of the Mouth, Philadelphia, W. B. Saunders Company, 1925, pp. 86-87.

2. Goadby, Kenneth: Diseases of the Gums and Oral Mucous Membrane, New York, Oxford University Press, 1923, pp. 68-69.

One of the most complete expositions on this subject I have been able to locate is that by Endleman,[3] who stated:

> The path of a sinus from an acute alveolar abscess is determined by the location of the involved tooth, the density of the tissues in the region of the abscess, the virulence of the infection, the influence of gravity and finally by the injudicious use of hot poultices. Those acute alveolar abscesses arising from the upper central incisors and cuspids usually open on the external or labial aspect of the maxilla, although occasionally they may discharge on the palatal aspect. Sinuses from the dental alveolar abscesses in upper single rooted teeth and in the buccal roots of multi-rooted teeth discharge, as a rule, upon the labial and buccal aspects, respectively; discharge upon the palatal side is the exception.

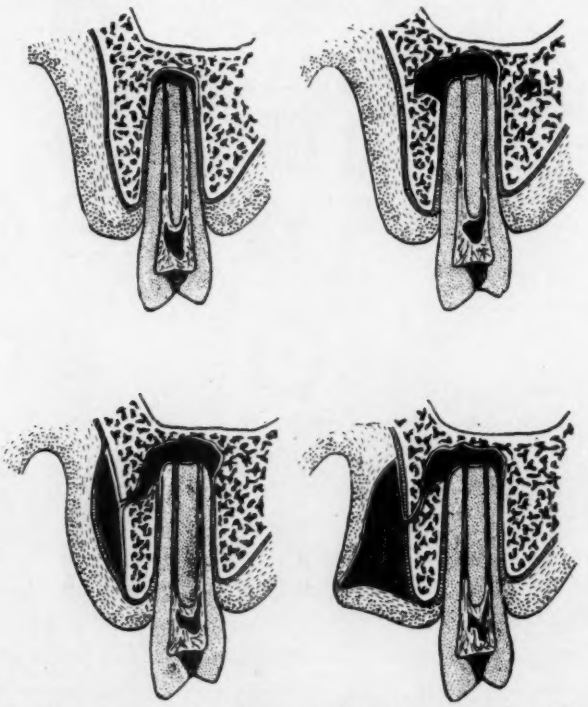

Fig. 4.—Beginning in the upper row, looking from left to right, the parts illustrate: acute periodontitis; acute abscess; subperiosteal parulis; subgingival parulis.

He also mentioned that such sinuses may open into the floor of the nasal cavity or the maxillary sinus. These acute abscesses, according to Endleman, rarely open on the lingual aspect of the mandible because of the fact that there is a greater thickness of bone between the apical areas of the teeth and the lingual aspect of the mandible than toward the labial side. Abscesses associated with the lower teeth often open externally. Gravity undoubtedly plays a considerable rôle in determining the course of the sinus. In addition, the cervical fasciae

3. Endleman, Julio: Dental Pathology, ed. 2, St. Louis, C. V. Mosby Company, 1927, p. 264.

undoubtedly have much to do with the location where the abscess points. As Endleman said: "If the infection has followed a course above the origin of the deep cervical fascia, the point of discharge may be somewhere upon the neck one or more inches under the border of the mandible." He mentioned one case in which such a sinus opened on the chest and another in which it opened on the upper third of the thigh.

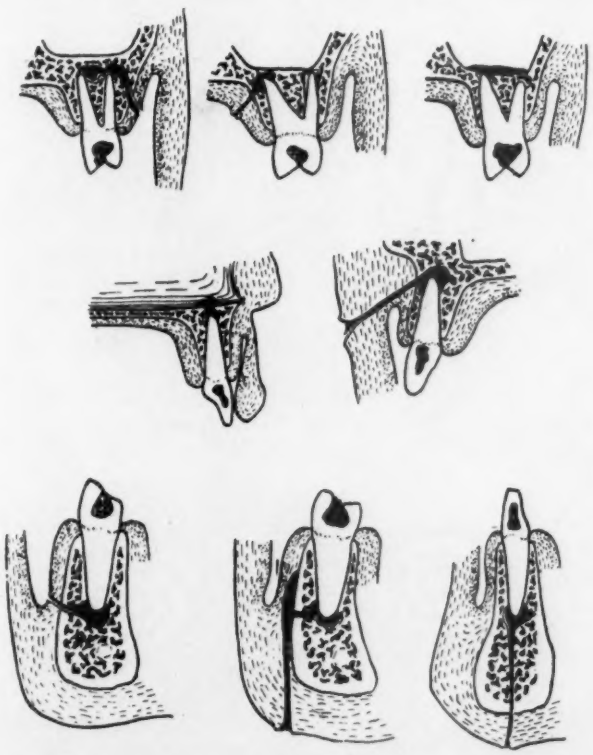

Fig. 5.—Beginning in the upper row, looking from left to right, the parts illustrate: sinus to the gum of the upper jaw; sinus to the palate; sinus into the antrum; sinus into the nasal cavity; sinus to the cheek; sinus to the gum; sinus to the skin of the lower jaw progressing along the outside of the bone; sinus to the chin. (The diagrams in figures 4 and 5 are from Thoma [6] and are reproduced by express permission).

I have been unable to find any references to these sinuses in Kurt Thoma's [4] recent book, "Clinical Pathology of the Jaws," or in Prinz and Greenbaum's [5] "Diseases of the Mouth."

4. Thoma, Kurt H.: Clinical Pathology of the Jaws, Springfield, Ill., Charles C. Thomas, Publisher, 1934.

5. Prinz, Herman, and Greenbaum, Sigmund S.: Diseases of the Mouth and Their Treatment. Philadelphia. Lea & Febiger. 1935.

However in Thoma's [6] earlier work, "Oral Abscesses," there is a complete account of the etiology and pathology of this condition. He expressed the belief that acute alveolar abscess is due to an invasion of the dental pulp or pulp chamber by virulent pyogenic bacteria. He enumerated and discussed completely the causes of such an infection under the following headings: traumatic injury of a tooth (this was apparently the cause in cases 1 and 3), infection from adjacent teeth,

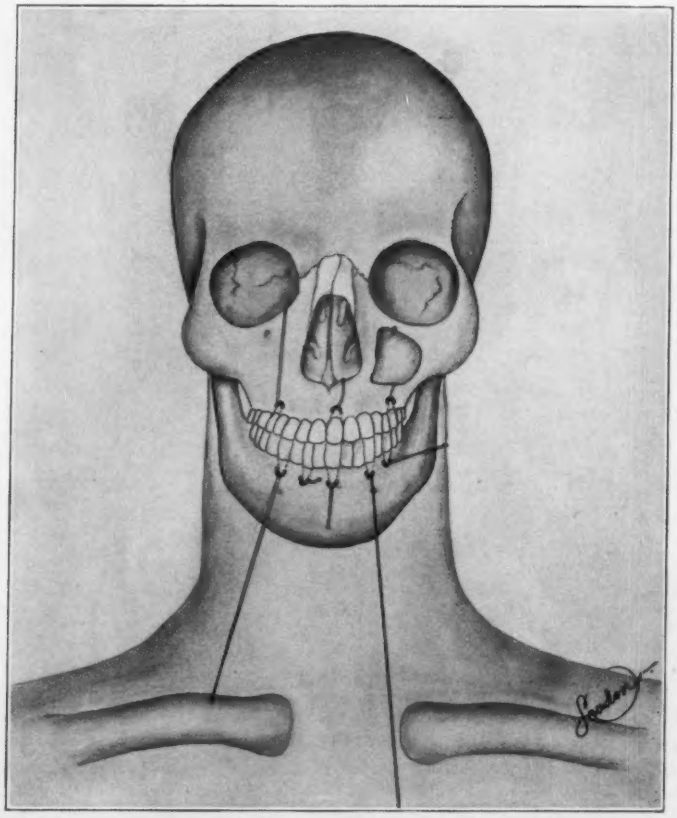

Fig. 6.—Diagrammatic representation of the different locations of persistent sinus tracts which may originate in connection with alveolar abscesses.

infection from pus pockets, thermal shocks conducted to the pulp by large metal fillings, crowned teeth, decay of deciduous teeth, decay of permanent teeth, filling of teeth that have infected pulps, instrumentation and changes in oxygen tension. In this connection it is well to note that these fistulas of the face and neck are often found in children

6. Thoma, Kurt H.: Oral Abscesses, Boston, Ritter & Co., 1916, pp. 18ff. and 157.

owing to the ease and frequency with which acute abscesses form on deciduous teeth. Other causes of infection in the alveolar processes of the jaws include residual areas of infection (osteomyelitis) after the extraction of teeth and so-called pericoronal abscess of the third molar, in which there occurs an infection about the crown of the tooth under the overlying flap of gum tissue.

Thoma pointed out that the course of such sinuses from acute alveolar abscesses is not always direct from the apex of the root through the gum. He said:

> If the periosteum is very resistant and if the pus accumulates in large quantities, it may follow the laws of gravity and least resistance and pierce the periosteum at a place quite remote from its source. Sinuses occur almost always at the buccal or labial part of the gum. Palatal sinuses are more rare but usually are derived from the superior incisor teeth and often lead some distance back into the mouth. Sinuses are still more rare at the lingual gum of the lower teeth, from which point the pus usually sinks downward, involving the tissues of the floor of the mouth.

He also said:

> A sinus to the face from the upper jaw is not very common. If it occurs, the outlet is near the malar process. From the inside of the mouth and from the front teeth the sinus, if it does not find any outlet to the gum, leads almost always to the chin.

In discussing the active sinus Thoma remarked:

> The walls of a sinus become fibrous, forming an adhesion between the abscess cavity and the gum, or if the sinus leads to the face, between the abscess cavity and the skin. The skin on these places appears, therefore, fixed to the bone and is drawn toward the diseased root apex in funnel fashion. This depression harbors the mouth of the sinus at it deepest point. Chronic abscesses discharge products of suppuration in large or small amounts for months and years.

As regards treatment Thoma emphatically stated:

> If a sinus to the face exists we always have to resort to extraction of the responsible tooth. . . . If a sinus exists it should be curetted and washed. After extraction of the tooth and curetting of the diseased area the sinus will close up speedily, unfortunately, however, not without leaving a permanent mark. This scar can be improved somewhat by excision of the fibrous connection which fixes the skin to the bone and closing of the wound by a plastic operation.

Blair [7] mentioned that such an alveolar abscess may discharge in the region of the inner canthus of the eye or follow the sternocleidomastoid muscle to the clavicular region.

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7. Blair, Vilroy Papin: Surgery of the Mouth and Jaws, ed. 3, St. Louis, C. V. Mosby Company, 1920, p. 376.

Green [8] in discussing inflammatory swellings simulating dacryocystitis cited the following case:

> J. M., a male, aged 20 years, presented an induration along the left lateral surface of the nose extending from the orbital margin to the alveolar process of the maxilla. There was a fistulous opening in the skin near the region of the lacrimal sac which had discharged intermittently during the six years the trouble had been going on. There was no antral disease. General condition excellent. Blood Wassermann negative.
>
> A kick in the face over the indurated area was regarded as a possible etiologic factor. The indurated area, which proved to be granulation tissue, was excised. There was no improvement following this small operation. Finally an incision was made along the attachment of the lip through the alveolar border from the right lateral incisor to the left second molar. On raising the soft tissue a large cavity in the bone communicating with the root of the left lateral incisor was exposed. The root was extracted. On cleaning the cavity there was found a root of a canine tooth lying free in the cavity. This tooth was extracted. The cavity was traced upward, and connection with the granulation wound below the left eye was discovered. The wound was packed wide open. Healing eventually took place, with slight ectropion to the lower lid.
>
> . . . [The diagnosis was] infection of a dental cyst spread upward with a formation of a fistulous tract having its orifice in the skin a little external to the site of the lacrimal sac.

Mead,[9] in discussing acute and chronic periapical diseases of the teeth, mentioned a chronic periapical abscess with a sinus through the soft tissues of the gum into the mouth or to the outside of the face. He said that when pus forms as a part of a periapical abscess it tends to escape through ". . . tissue or avenues affording the least resistance. It may form a local sinus or it may penetrate the tissues and escape at some distant point, such as the nose, cheek, sinus, throat, etc. Usually the pus finds an exit through the external alveolar plate and into the mouth."

These granulomatous lesions are apparently not uncommon; I have observed four cases of such involvement in the past four years. The essential fact is to realize that no external treatment is of any use in treating such a lesion. The underlying cause in most instances is an alveolar abscess, the cure of which demands extraction of the affected tooth, curettement and drainage of the abscess cavity and cauterization of the sinus tract. These lesions are of the same type and order as those seen on the buttocks in association with an anal fistula. The condition observed in case 3 is certainly uncommon, and I have not been able to find any record of similar manifestations in the literature. Of course, sinus tracts from an underlying syphilitic osteitis are not rare,

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8. Green, John, Jr.: Inflammatory Swellings Simulating Dacryoscyptitis, Tr. Am. Ophth. Soc. **22**:244, 1924.

9. Mead, Sterling V.: Diseases of the Mouth, ed. 4, St. Louis, C. V. Mosby Company, 1933, pp. 286-294.

but, according to Stokes,[10] these generally appear as the result of pathologic changes in the long bones, and he distinctly mentions that such changes in the jaw bones are extremely rare. I frankly admit that the syphilitic nature of this condition would probably have been overlooked had not a definite diagnosis been made by the roentgenologists.

The only lesions which might be confused with such granulomas are those associated with persistent thyroglossal ducts and actinomycosis. The former are always situated in the midline of the neck while the latter are generally located about the jaw and have multiple sinus openings, in material from which the ray fungus may be observed in the form of the typical sulfur yellow granules.

Also to be considered are fistulas of the salivary glands and branchial fistulas. Fistulas of the salivary glands are the result of trauma, especially operative procedures, penetrating and puncture wounds, abscesses, cysts, neoplasms or calculi. Their special characteristic is the repeated and continued flow of saliva from the fistulous opening. Branchial fistulas generally appear on the sides of the neck, often along the anterior border of the sternocleidomastoid muscle, and extend internally to the region of the tonsil.

CONCLUSIONS

In case 1 there was a persistent sinus tract associated with a granulomatous lesion of the chin, the underlying causative factor being a periapical abscess of a tooth.

In case 2 the persistent sinus tract occurred as a result of a syphilitic osteomyelitis of the jaw.

In case 3 the persistent sinus tract opened on the labial aspect of the lower gum. This condition also had as its underlying cause a periapical abscess.

The dermatologic features of these conditions have been noted.

The underlying pathologic process has been discussed briefly. This forms the basis for the correct treatment of this condition, namely, extraction of the diseased tooth and curettement of the abscess cavity, in other words, removal of the source of the infection.

Drs. Crossan and Goin and Drs. Van Buskirk and Cummings gave assistance in the work necessary for the presentation of these cases and Dr. Kurt Thoma allowed the reproduction of two plates portraying the essential cause of these persistent tracts.

2007 Wilshire Boulevard.

ABSTRACT OF DISCUSSION

Dr. George M. MacKee, New York: I think it is well that this subject has been presented to dermatologists. As Dr. Anderson said, it is a rather common condition, seen fairly often by dentists, but it is curious that more of the patients

10. Stokes, John H.: Modern Clinical Syphilology, Philadelphia, W. B. Saunders Company, 1934, p. 874.

do not come to dermatologic clinics. I have not seen one with this condition in my clinic or in private practice for many years. I can, however, confirm everything Dr. Anderson said, for about thirty years ago I did considerable roentgenologic work for dentists and saw many of these lesions. If one is not familiar with them one is likely to think of some type of cyst, of actinomycosis, of tuberculosis, of syphilis and of epithelioma. I know that in many cases treatment for other conditions has been given before the real case was diagnosed.

Successful treatment, as Dr. Anderson said, depends on recognizing and then on overcoming the cause, which is usually a simple matter. In most of the cases I observed the condition was due to apical abscess. These lesions usually appear on the gums; occasionally they are seen on the palate and not infrequently on the cheek, chin and neck.

Dr. Earl D. Osborne, Buffalo: My co-workers and I have twelve cases of similar manifestations on our records. When Dr. MacKee said he had not observed any recently, the fact occurred to me that during the last several years I have been giving courses to dentists, and in every case the patient with such a sinus has been referred to me by a practicing dentist. In our group the lesion occurred on the outside; no lesion affected the hard or soft palate, and only one involved the gum.

One thing has been of great value to us in making a diagnosis, namely, that we can always palpate a fine firm indurated tract on the inside of the cheek by placing the finger on the inside of the cheek. By palpating this tract down to its source one can determine just what tooth is involved. This is of value in making the diagnosis.

Dr. Bedford Shelmire, Dallas, Tex.: Apical abscesses do not always result in sinuses. Gingival granulomatous tumors often result from this infection. These tumors are soft beefy lesions from the size of a pea to that of a cherry situated along the gingival borders of the gums. Etiologically and pathologically they are identical with granuloma pyogenicum of the glabrous skin except that the gingival granuloma presents a peculiar feature; namely, strands of proliferating epithelial cells may indicate a diagnosis of malignant disease if the physician is not versed in the peculiarities of this tissue. They are the result of hypertrophy of epithelial dental rests. These granulomas obtain entrance into the oral cavity through the spaces between the tooth and the gum.

Dr. E. L. Oliver, Boston: I have observed three cases of this condition in the last few years. In the first the lesion resembled an epithelioma. I curetted it and found a sinus that extended about 2 inches (5 cm.). The lesion was over the upper jaw. I realized then that it was probably due to a diseased tooth. The tooth was extracted and the sinus burned out, and that ended the trouble. The lesion had been present for many years before I saw the patient.

Dr. F. E. Senear, Chicago: I agree that it is a good thing that this condition has been called to the attention of dermatologists. About fifteen or twenty years ago within five years I observed several cases of this condition in collaboration with Dr. Pusey. In all the cases the lesions were on the cheek in the malar region or somewhat below it. After that I did not observe any until about three months ago, when a young girl applied for treatment of a dimple-like depression on the chin in which there was a small granulomatous tumor which had been diagnosed as granuloma pyogenicum. It was treated as such, but when it recurred my co-workers and I thought of a sinus tract, and on careful examination I found that the granuloma was apparently secondary to the sinus. Since

then two of my associates have observed two cases of similar manifestations in other institutions; hence after an interval of many years we have observed three cases within a few months.

Dr. M. H. Ebert, Chicago: I think all the members appreciate this contribution of Dr. Anderson's. I wish to point out one condition which might be confused with these lesions. Recently in Dr. Ormsby's office I saw a young man with a lesion the size of a coffee bean in the fold between the gingival and the labial mucosa on the lower jaw. The lesion did not look as red as lesions of this type commonly do. It was more flabby and there was a central sinus. Roentgenographic study of the jaw showed no abnormalities, and there was no enlargement of the glands. A section from the border of the lesion showed a tuberculous structure, and further study revealed quiescent tuberculosis. Therefore I think that in some cases tuberculosis should be considered.

Dr. Fred D. Weidman, Philadelphia: Thus far most of these lesions have been described as occurring on the lower part of the face, and I was gratified when Dr. Senear reported having observed one affecting the malar region. I wish to repeat a previously published report of one of these lesions occurring in a monkey, the lesion being high up on the cheek near the nose. When the animal was first brought in I had no idea that the lesion was related to the teeth, but probing easily demonstrated the connection. In the pus I observed the most classic ray fungus I have ever seen. Incidentally, that lesion, being high up near the nose, was in the position where a dacryocystitis may occur. Such lesions are sometimes caused by a streptothrix, and the disease has been called actinomycosis by ophthalmologists, but it is not due to a pathogenic actinomyces. The saprophytic organism (Nocardia Foersteri) that is responsible dies; the colony becomes more or less calcified and constitutes a foreign body which predisposes to suppuration. So-called actinomycosis of the lacrimal duct is one of the conditions that must be distinguished from these sinuses of apical origin when they occur in that position.

Dr. Nelson Paul Anderson: In the paper I mentioned the fact that many cases have occurred in which the sinus tract has led to the region of the lacrimal duct, and ophthalmologists have occasionally operated on these lesions on the basis of an erroneous diagnosis of dacryocystitis. Sinus openings on the upper jaw are relatively rare, but when they occur they are practically always seen in the malar region. I doubt whether the organism of actinomycosis observed in case 1 meant anything.

It is well to point out that these lesions often last for months or years, and instead of a single tract there may be multiple sinus openings pointing in many directions.

LXXVIII.—EFFECT ON THE LEUKOCYTES OF THERAPY WITH A GOLD PREPARATION

RICHARD S. WEISS, M.D.

CLINTON W. LANE, M.D.

AND

JAMES W. BAGBY, M.D.

ST. LOUIS

Since the introduction of gold as a therapeutic agent in the treatment of lupus erythematosus, dermatologists have had exceptionally good opportunities to observe the effects of this metal on the human body. Numerous cases of toxic effects have been reported, and in most of these the reactions have paralleled the toxic effects of other heavy metals, namely, bismuth, arsenic and mercury. Recently, gold salts have been extensively used in the treatment of arthritis, and several reports of toxic effects in some of the patients have appeared.

Furthermore, it has become increasingly evident that gold, like the other heavy metals, arsenic, bismuth and mercury, not only may produce cutaneous eruptions and visceral symptoms but also may cause blood dyscrasias. Malignant leukopenia, agranulocytosis, aplastic anemia and various types of purpura have been reported.

In a discussion of lupus erythematosus disseminatus at the meeting of the American Dermatological Association in Toronto, Canada, in 1931, Mook, Weiss and Bromberg [1] stressed the importance of leukopenia as an important diagnostic symptom. While the connection of discoid and disseminate lupus erythematosus is not clear, still it is known that patients with the former may at times exhibit the latter.

Read at the Fifty-Ninth Annual Meeting of the American Dermatological Association, Inc., Swampscott, Mass., June 6, 1936.

Studies, observations and reports from the Barnard Free Skin and Cancer Hospital and the School of Medicine, Washington University, Department of Dermatology, service of Dr. M. F. Engman.

1. Mook, W. H.; Weiss, R. S., and Bromberg, L. K.: Lupus Erythematosus Disseminatus, Arch. Dermat. & Syph. **24**:786 (Nov.) 1931.

Several years ago Engman Sr. suggested that gold was a leukocytic poison and that the best method of preventing toxic effects would be to control the administration of this metal by observation of the leukocyte response. It was his opinion that if any tendency toward leukopenia was observed, the further use of therapy with a gold compound was contraindicated or that further therapy should be continued with extreme caution.

We felt that not enough attention had been paid to the leukocyte count when injections of a gold preparation were used as a therapeutic measure; therefore, a study of the leukocyte count was undertaken in a series of cases of the chronic discoid form of lupus erythematosus in which treatment with gold salts was used. In this series both gold and sodium thiosulfate and gold chloride were used; the figures showing the amount of gold administered are therefore given in terms of metallic gold. All blood cell counts were made approximately two hours after the noon meal. Leukocyte counts of 6,000 and 10,000 were considered as the lower and upper limits of normal, respectively, and a count of 8,000 was taken as the median. Some studies have indicated that the leukocyte counts should be considered within normal limits if they are between 6,000 and 9,000. The report of Sabin and her co-workers [2] gives 5,000 and 10,000 as the normal limits. They cited the figures given by Galambos as from 3,500 to 12,500; those given by Turk, as from 5,000 to 10,000, and those given by Torday, as from 3,130 to to 9,800. A later report by Juster [3] indicates that a leukocyte count from 4,000 to 9,000 may be more correctly regarded as normal. In view of the difference of opinion, we felt that the usual figures of from 6,000 to 10,000 should be used for this study, especially as the counts in cases in which treatment with a gold compound was given could be compared with those in the cases in which no treatment was administered and a difference, if any was present, noted.

The difficulties inherent in such a study are, of course, obvious: the inability to induce the patient to return for the counts at regular and stated intervals, the personal equation involved in having several phy-

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2. Sabin, Florence R.; Cunningham, R. S.; Doan, C. A., and Kindwall, J. A.: The Normal Rhythm of the White Blood Cells, Bull. Johns Hopkins Hosp. **37**:14 (July) 1925.

3. Juster, I. R.: The Normal Range of the Leukocyte Count, J. Lab. & Clin. Med. **21**:376 (Jan.) 1936.

sicians make the counts and the sudden and marked changes in the counts due to minor infections which make absolute accuracy in such studies out of the question. Therefore, the charts which we present show tendencies only and allow us merely to make inferences which, when taken into consideration with clinical reports, suggest that the best index for control of therapy with a gold preparation is the leukocyte count.

We have made no attempt to investigate the effect of gold on the granulocytes as we felt that the total leukocyte count was a sufficient and relatively easy guide.

The results of our studies are presented in a series of charts. The maximum, median and minimal lines are indicated, and the tendencies of the counts to be above or below the median will be brought out.

COMMENT

Two hundred and seventy-seven blood counts were made on sixteen patients treated with a gold compound. Of these counts 27.4 per cent were at or above the median, as compared with 39.6 per cent of the control counts; 72.6 per cent were below the median as compared with 60 per cent of the controls; 47.3 per cent were below 7,000, as compared with 43 per cent of the controls, and 24.5 per cent were below 6,000 while 30 per cent of the controls were below that figure. The only discordant results were in the counts below 6,000, the percentage for the untreated patients being larger than that for the treated patients. This discrepancy was apparently due to the fact that treatment was often discontinued when the count dropped below 6,000.

Because of the relatively small number of counts made on most of the patients these figures and charts show only a trend. A study of the control counts shows that there is a distinct tendency toward a low leukocyte count in patients with discoid lupus erythematosus. Also patients treated with a gold preparation appear to show a distinct trend to a further diminution in the number of leukocytes. This is evidenced by the frequency with which counts below 6,000 were encountered and is further suggested by the fact that three fourths of the counts were below the median, 8,000.

None of the patients showed any symptoms or physical signs of gold intoxication. They had ordinary lupus erythematosus discoides. When signs and symptoms of gold intoxication appear, it is well known that definite leukopenia can occur and that it may be extreme.

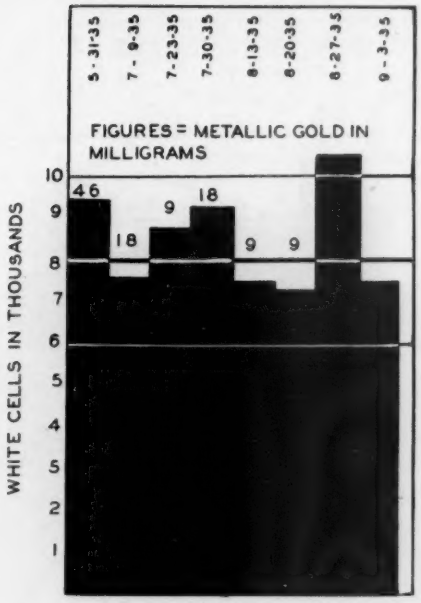

Chart 1 (case 1).—A total of 109 mg. of gold was given in about four months. No counts were below 7,000. The count rose to 10,500 one week after administration of the gold preparation was discontinued; it fell to 7,500 a week later. Eight counts were made; four, or 50 per cent, were below the median; none was below 7,300. The counts indicated good tolerance for gold.

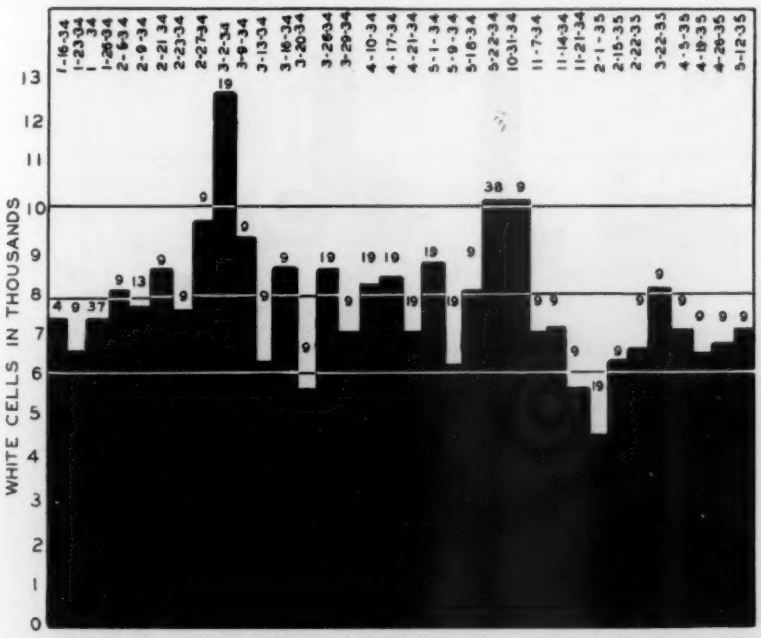

Chart 2 (case 2).—A total of 433 mg. of gold was given in about seventeen months. Thirty-four counts were made; three, or 8 per cent, were at the median; eleven, or 33 per cent, were above the median; twenty, or 59 per cent, were below the median. Three counts were below 6,000, the lowest being 4,600; ten, or 29 per cent, were below 7,000. The counts indicated a fair tolerance for gold.

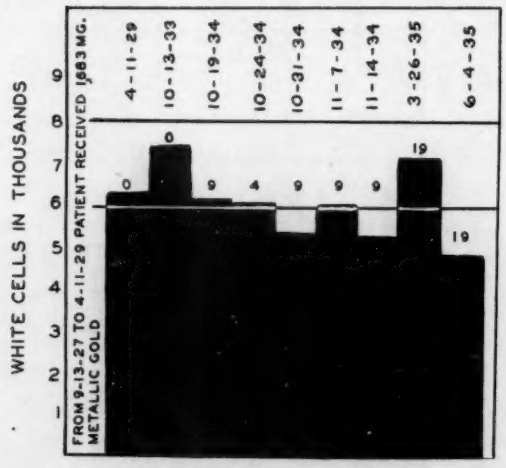

Chart 3 (case 3).—A total of 1,683 mg. of gold was given between Sept. 13, 1927, and April 11, 1929. Between Oct. 19, 1929, and June 4, 1935, 17 mg. of gold was given. During the latter period seven counts were made, and seven, or 100 per cent, were below the median; three counts were below 6,000, the lowest being 4,800; six, or 86 per cent, were below 7,000. The counts indicated a poor tolerance for gold. Caution and small doses seemed to be necessary in spite of the fact that the patient had received a large amount of a gold preparation before the counts were started.

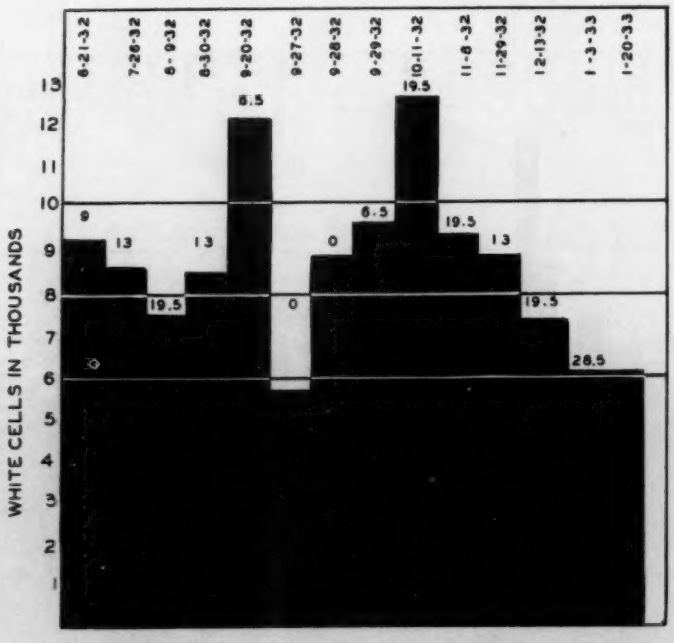

Chart 4 (case 4).—A total of 167.5 mg. of gold was given in about nine months. Fourteen counts were made; nine, or 60 per cent, were above median; five, or 30 per cent, were below median. The lowest count was 5,400, and it was the only one below 6,000. Three, or 21 per cent, were below 7,000. Apparently there was a fair tolerance for gold, but the steady drop at the end of the curve called for caution and smaller doses.

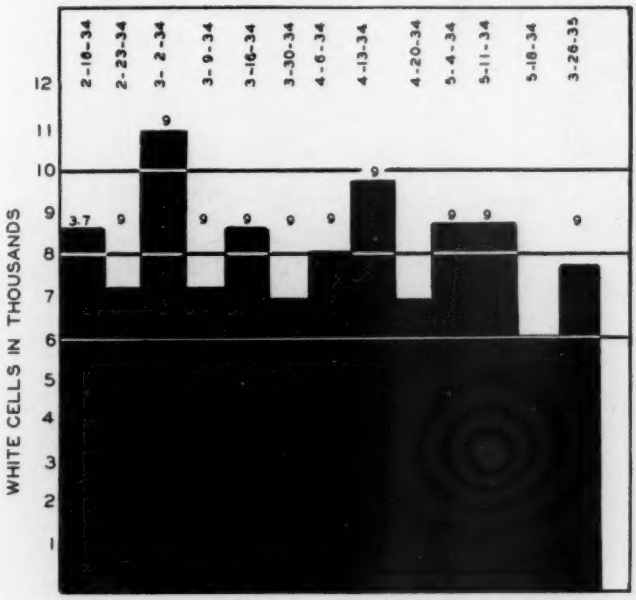

Chart 5 (case 5).—A total of 111 mg. of gold was given in about thirteen months. Thirteen counts were made; seven, or 52 per cent, were above median; six, or 48 per cent, were below median. No counts were below 6,000; one, or 8 per cent, was below 7,000. The counts indicated a good tolerance for gold.

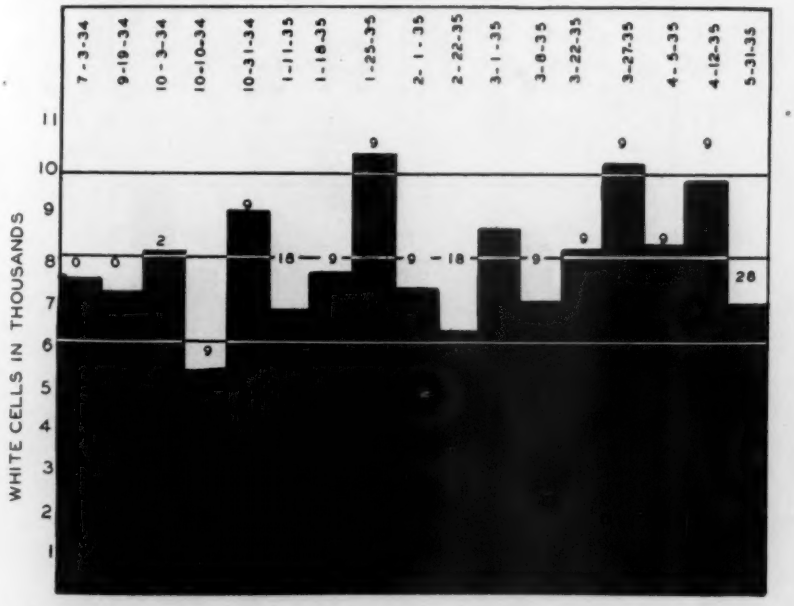

Chart 6 (case 6).—A total of 165 mg. of gold was given in about seven months. Seventeen counts were made; eight, or 41 per cent, were above the median; nine, or 59 per cent, were below the median. One count was below 6,000 (5,500); five, or 29 per cent, were below 7,000. The counts indicated a fair tolerance for gold.

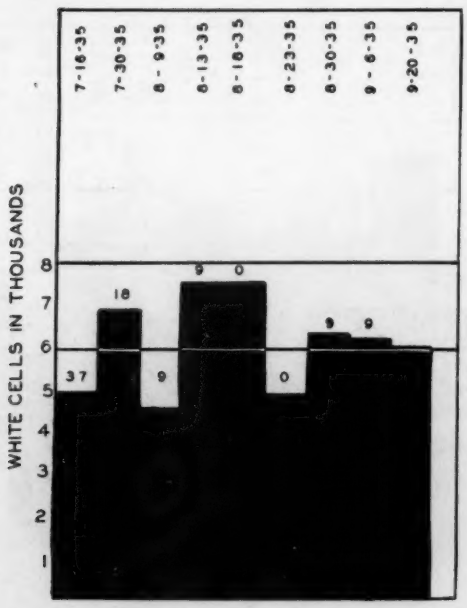

Chart 7 (case 7).—A total of 91 mg. of gold was given in about two months. Nine counts were made; nine, or 100 per cent, were below median; three, or 33 per cent, were below 6,000 (all of these were below 5,000). The lowest count was 4,700; seven, or 78 per cent, were below 7,000. The counts indicated a poor tolerance for gold.

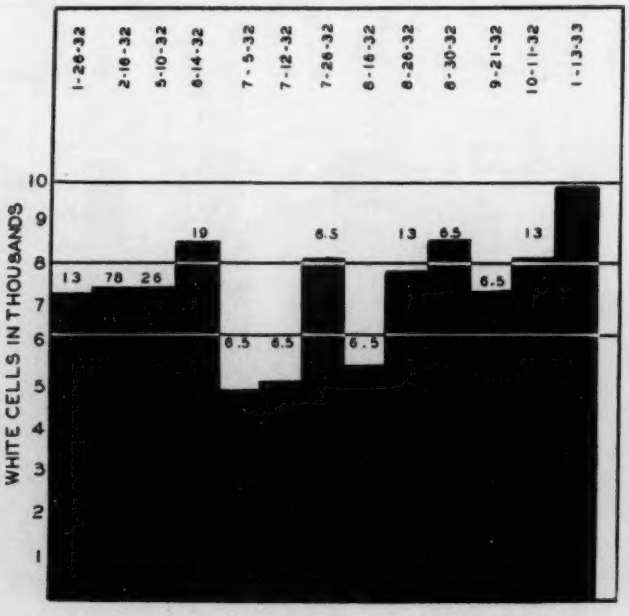

Chart 8 (case 8).—A total of 211 mg. of gold was given in about twelve months. Thirteen counts were made; five, or 39 per cent, were above median; eight, or 61 per cent, were below median; three were below 6,000. The lowest count was 5,000; three, or 23 per cent, were below 7,000. The counts indicated a fair tolerance for gold, but caution was also indicated.

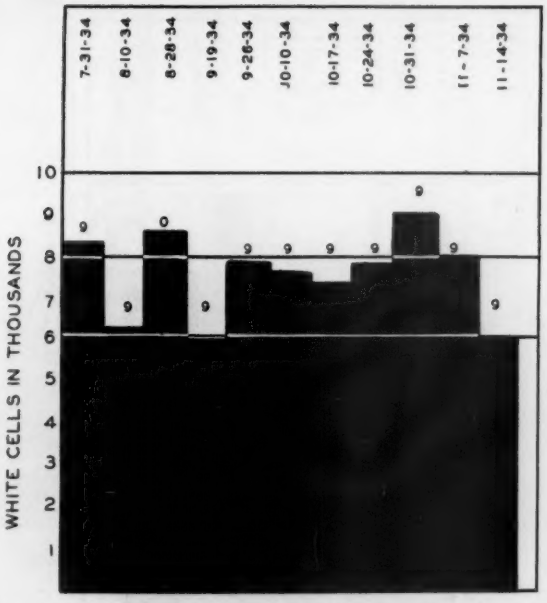

Chart 9 (case 9).—A total of 90 mg. of gold was given in about four months. Eleven counts were made; three, or 27 per cent, were above the median; one was exactly on the median; seven, or 63 per cent, were below the median. The lowest count was 5,900; three, or 27 per cent, were below 7,000. The counts indicated a rather fair tolerance for gold.

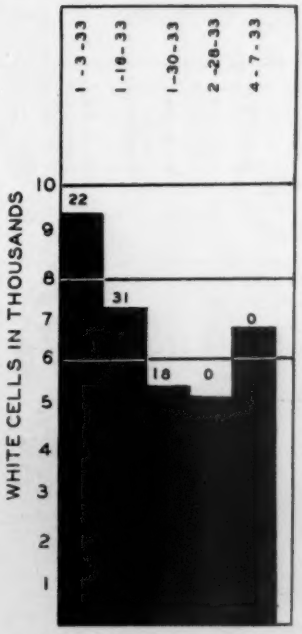

Chart 10 (case 10).—A total of 71 mg. of gold was given in about one month. Five counts were made; four, or 80 per cent, were below the median; the only count above the median was one made when treatment was started. It was 9,700. After three weeks of treatment the count dropped to 5,700; it rose to 6,700 about five weeks after the administration of the gold preparation was stopped. Three, counts, or 60 per cent, were below 7,000. The precipitate drop in the counts may indicate impending disaster and shows that treatment with a gold compound should be discontinued.

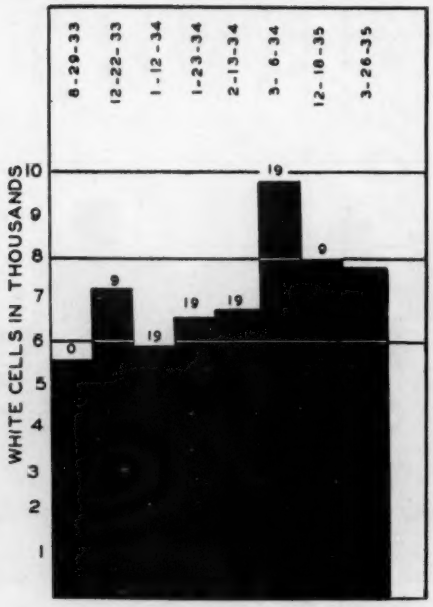

Chart 11 (case 11).—The patient had previously received 185 mg. of gold. When eight counts were made in a period of about one year 94 mg. of gold had been given. Seven counts, or 87.5 per cent, were below the median, and one, or 12.5 per cent, was above the median; two counts were below 6,000. The lowest count was 5,600; four, or 50 per cent, were below 7,000. The upward curve may indicate good tolerance for gold, but the initial low counts seem to indicate need for caution.

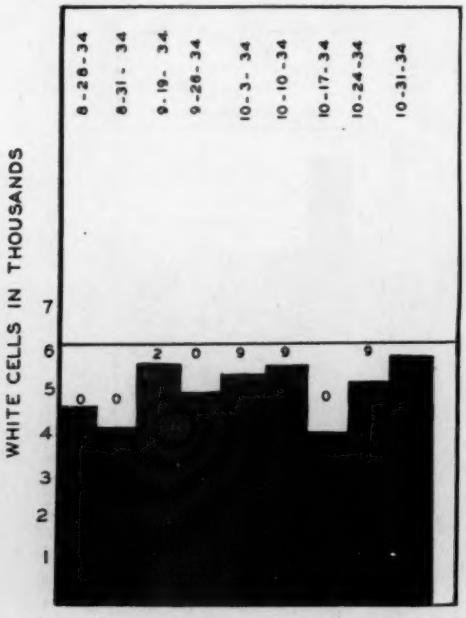

Chart 12 (case 12).—A total of 29 mg. of gold was given in about two months. The leukocyte counts were low (4,800 and 4,100) before treatment was started. All the counts were below the median and below 6,000. The lowest count was 4,000. Nine counts were made; 100 per cent were below the median, 100 per cent were below 7,000, and 100 per cent below 6,000. The patient was a poor risk for treatment with a gold preparation. It was discontinued.

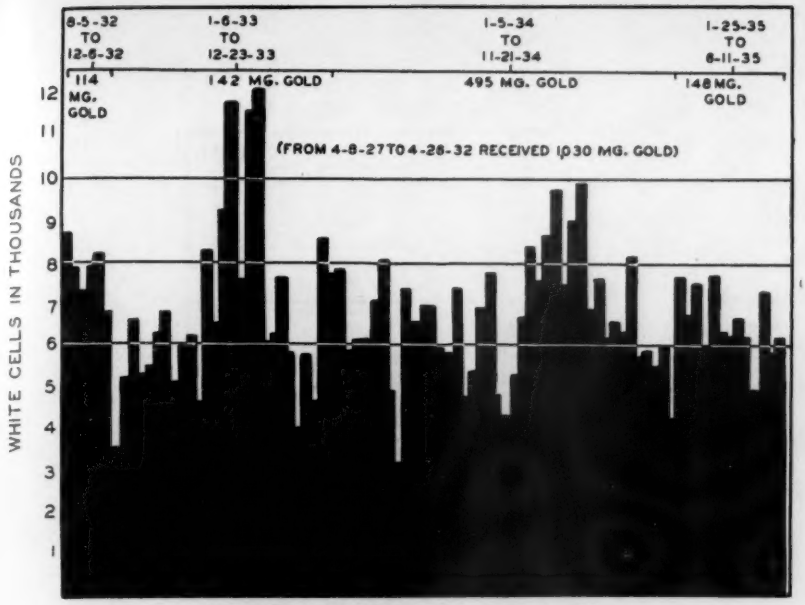

Chart 13 (case 13).—Before blood counts were started the patient received 1,030 mg. of gold irregularly over a period of about sixty months. In the period from Aug. 5, 1932, to June 11, 1935, 899 mg. of gold was given. During the latter period eighty-seven blood counts were made. Thirteen, or 15 per cent, were above the median; seventy-three, or 84 per cent, were below the median; one was on the median; thirty-four, or 39 per cent, were 6,000 or less; there were three counts below 4,000; fifty-four, or 62 per cent, were below 7,000. This patient tolerated gold well in spite of the large number of relatively low counts. It will be noted that he had usually a good "come back" in the counts following those in which the number of leukocytes was lowest.

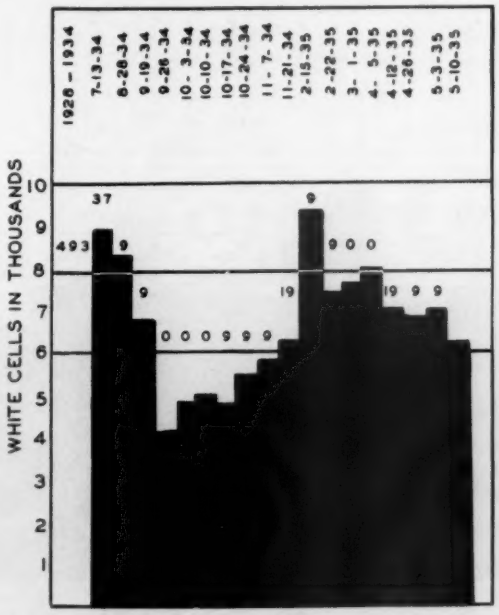

Chart 14 (case 14).—From 1928 to 1934 493 mg. of gold was given. From July 3, 1934, to May 10, 1935, the patient received 156 mg. of gold. During the latter period eighteen blood counts were made; three, or 16.66 per cent, were above the median; fifteen, or 83.33 per cent, were below the median; seven, or 39 per cent, were below 6,000. The lowest count was 4,000; twelve, or 67 per cent, were below 7,000. The tolerance for gold was apparently good, but the drop in the number of leukocytes to about 4,000 called for caution in the dosage.

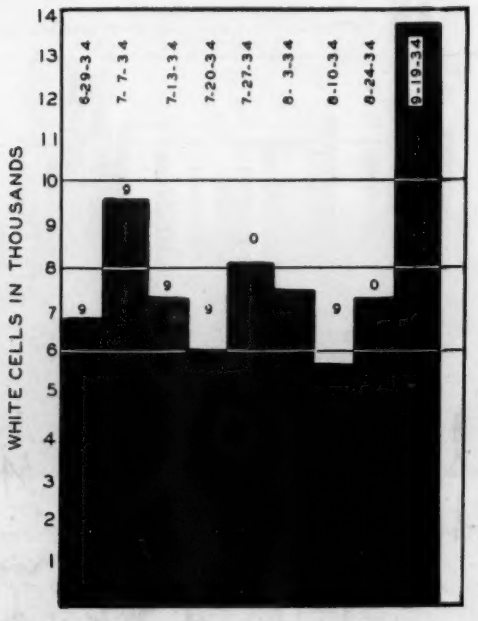

Chart 15 (case 15).—A total of 54 mg. of gold was given in three months. Nine counts were made; three, or 33.33 per cent, were above the median; six, or 66.66 per cent, were below the median. The lowest count was 5,500; three, or 33 per cent, were below 7,000. The chart indicates a fair tolerance for gold.

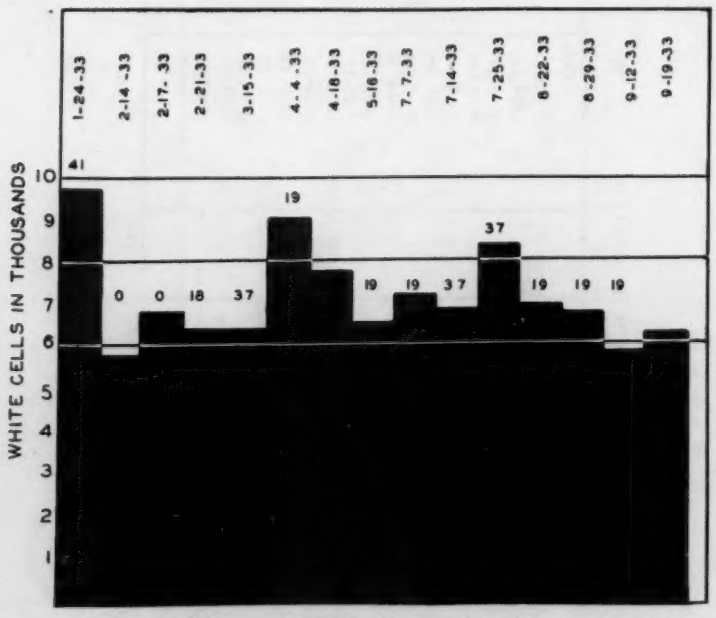

Chart 16 (case 16).—A total of 321 mg. of gold was given in eight months. Fifteen counts were made; three, or 20 per cent, were above the median; twelve, or 80 per cent, were below the median. The lowest count was 5,900. Two counts were below 6,000; eight, or 53 per cent, were below 7,000. The counts were relatively low, but the tolerance was apparently fair.

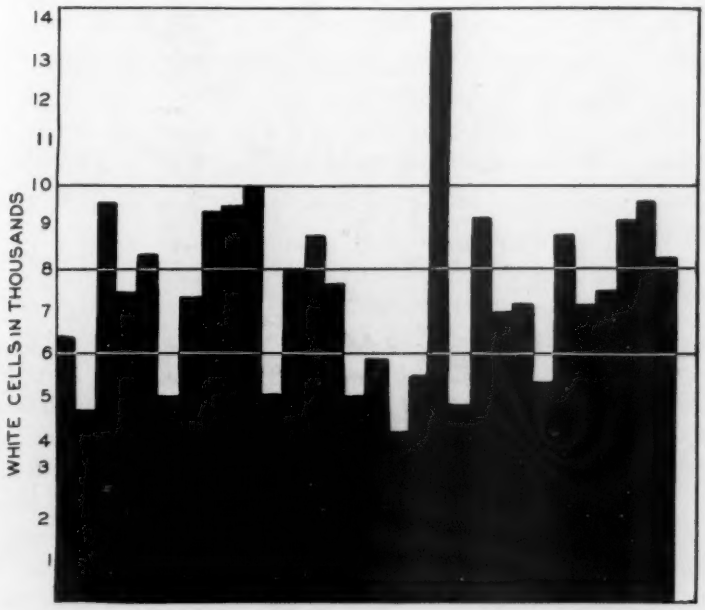

Chart 17 (controls).—Leukocyte counts were made on a series of thirty patients before treatment with a gold preparation was started. Twelve, or 39.6 per cent, of the counts were at or above the median; eighteen, or 60 per cent, were below the median; thirteen, or 43 per cent, were below 7,000; nine, or 30 per cent, were below 6,000. Discoid lupus erythematosus tended to be associated with a relatively low leukocyte count.

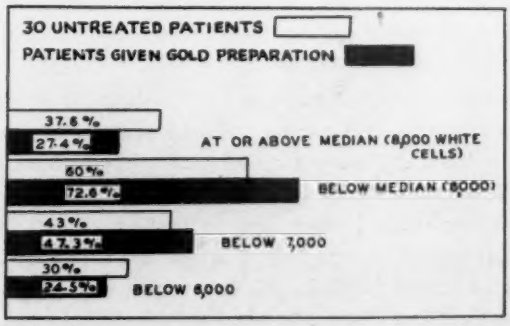

Chart 18.—Comparison of leukocyte counts of untreated patients and of patients treated with a gold preparation. The chart shows that 10.2 per cent more counts were above the median in the untreated than in the treated group; that 12.6 per cent more counts were below the median in the treated than in the untreated group; that 4.3 per cent more counts were below 7,000 in the treated than in the untreated group, and that 5.5 per cent more counts were below 6,000 in the untreated than in the treated group.

CONCLUSIONS

In view of the fact that patients with discoid lupus erythematosus tend to show a depression in the total leukocyte count, we believe that all such patients should have leukocyte counts at frequent intervals and that treatment with a gold compound should be controlled by the leukocyte count. Furthermore, in patients in whom the initial counts are low treatment with a gold compound should be carried out with minimal dosage and with great caution.

ABSTRACT OF DISCUSSION

Dr. Harold N. Cole, Cleveland: I think that sometimes negative evidence in a paper is more valuable than positive evidence. It does not seem to me that Dr. Weiss and his co-workers have shown from this study that there is much difference between the leukocyte counts of treated and those of untreated patients. I am much interested in the matter, and I think it would be well if further study could be made, with particular reference to granulocytes and thrombocytes.

Dr. Earl D. Osborne, Buffalo: Does Dr. Weiss think that in any of these cases the leukocyte count indicated an impending dermatitis from the gold preparation?

Dr. Richard S. Weiss, St. Louis: I do not wish to leave the impression that we are afraid to use or that we are not using a gold preparation. In our opinion such a preparation is the most valuable agent we have for the treatment of discoid lupus erythematosus, but we feel that we can anticipate trouble and perhaps disaster by carefully observing the leukocyte count. When the study was almost completed it occurred to us that we should have made many differential counts at the same time, but our staff was small, and as this would have trebled or quadrupled the work we did not start it. It might be well to follow the differential and platelet counts in these cases in order to observe whether the drug has any marked effect on the granulocytes and thrombocytes.

No claim is made for absolute accuracy in this study. It is impossible to get absolute accuracy for many reasons; not only the personal equation but also the fact that the white blood cell counts may vary materially in the same person in a short period of time must be taken into consideration; the upper and lower limits of normal have by no means been decided on by hematologists; indeed there is some evidence that certain persons always have a low leukocyte count, and such a low count may be normal for them. We believe that in the present state of our knowledge, when there is a distinct trend to a marked diminution in the number of leukocytes in patients with lupus erythematosus who receive a gold preparation caution is indicated. Whenever there is a sharp drop in the leukocyte count it is our opinion that the dose should be lessened or the administration of the drug stopped for a time. Since we have adopted this control method we have had no serious reaction of any type to gold.

INVESTIGATION OF THE FUNGOUS FLORA OF APPARENTLY NORMAL SKINS

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R. N. NYE, M.D.

AND

S. M. COUSINS, PH.D.

BOSTON

REVIEW OF THE LITERATURE

This study was undertaken with the purpose of (*a*) determining the usual fungi that appear in cultures from normal skins for comparison with those which appear in cultures from lesions, (*b*) determining whether fungi pathogenic to the skin occur on skin without causing lesions and with what frequency and (*c*) determining the bacterial flora of the same skins and the possible bearing of the presence or absence of certain bacteria on the factors mentioned.

Several investigators have carried out experiments to determine the fungous flora of apparently normal skins. Williams [1] obtained Trichophyton lacticolor and Epidermophyton cruris from two of the thirty-six normal skins he examined. Cornbleet,[2] after eliminating subjects who reported that they had had previous fungous infections, was able to culture from one hundred apparently normal toes three "possibly pathogenic" fungi, the organisms being Epidermophyton inguinale in two cases and Microsporum Audouini in one; in addition, he observed a variety of common yeasts and molds. Burgess, [3] however, in a similar cultural examination of one hundred normal toes observed no ringworm fungi; he expressed the belief that the fungi are rarely present on skin without causing characteristic reactions. Jamieson and McCrea [4]

From the Dermatological Department and the Mallory Institute of Pathology, Boston City Hospital, and the Laboratory of Cryptogamic Botany, Harvard University.

1. Williams, Charles M.: The Diagnosis of Some Eruptions on the Hands and Feet, Arch. Dermat. & Syph. **5**:161-173 (Feb.) 1922.

2. Cornbleet, Theodore: XLVII. Cultures from the Skin of Apparently Normal Feet, Arch. Dermat. & Syph. **13**:670-671 (May) 1926.

3. Burgess, J. F.: Fungus Infections of the Skin: Cultural Study of the Flora of Ringworm, Arch. Dermat. & Syph. **12**:853-857 (Dec.) 1925.

4. Jamieson, Robert C., and McCrea, Adelia: Recurrence or Reinfection in Ringworm of the Hands and of the Feet, Arch. Dermat. & Syph. **25**:321-333 (Feb.) 1932.

advanced, as a possible explanation of the presence of pathogenic fungi on apparently normal skins, the theory that a fungus can remain dormant in skin for some time after the lesion it caused has disappeared; they based this suggestion on their observation of strands, which they interpreted as hyphae, deep in the skin some time after clinical cure had occurred.

Benham and Hopkins [5] have reported on the yeastlike fungi observed on the skins of normal subjects and have carefully reviewed the literature. From the fingers, finger-nails, toe-nails and toe webs six strains of Monilia, one hundred and twenty strains of Cryptococcus and thirty-five strains of Mycoderma were recovered. These represent fungi both on and in the superficial layers of the skin, for no attempt was made to cleanse or sterilize the surface before taking the cultures.

Little has been reported on the possible interrelations of dermatophytes and bacteria on the skin, although the theory has been advanced more than once that fungi are secondary invaders of bacterial lesions and cannot enter an uninjured skin.

MATERIALS AND METHODS

Scrapings were made from skin of fifty male and fifty female patients in two medical wards, T and U, in the Boston City Hospital over a period of seven weeks, from May 25 to July 10, 1933. Specimens were taken from all the patients whose skin appeared to be perfectly normal. The group included white and Negro patients aged from 13 to 89 who had been in the hospital from one-half day to two and a half months. Notes were kept of the patient's name, age and sex, of the date of admission to the hospital and of the diagnosis of disease, in order to determine whether there might be any correlation between any of these factors and the fungous flora of the skin.

Scrapings from skin from three areas on each patient, namely, from behind the ears, from the corners of the mouth and from between the third, fourth and fifth toes, were made with a curet which was sterilized after each scraping by being wiped with cotton moistened with alcohol, dipped in alcohol and flamed. Each area of skin was wiped with sterile cotton dipped in 70 per cent alcohol to remove any dust and then scraped twice, to remove surface débris and to make sure of obtaining some of the outer skin cells. In no case, however, was the scraping deep enough to cause bleeding. The material was placed immediately in tubes of Sabouraud's agar (peptone 1 per cent, dextrose 4 per cent, agar 1.5 to 2 per cent in water) adjusted to p_H 5 to discourage bacterial growth. The cultures were kept at room temperature and were examined at weekly intervals for a month thereafter. Yeasts and filamentous fungi that appeared were isolated in pure culture and identified.

The scrapings made in twenty consecutive cases were also cultured on sheep blood-beef infusion agar plates. These were examined after twenty-four and

5. Benham, R. W., and Hopkins, A. McH.: Yeastlike Fungi Found on the Skin and in the Intestines of Normal Subjects: A Survey of One Hundred Persons, Arch. Dermat. & Syph. **28**:532-543 (Oct.) 1933.

forty-eight hours' incubation at 37 C., and subcultures to fresh blood agar plates and to beef infusion broth (p_H 7.6) were made of all types of growth suggesting the presence of pathogenic bacteria.

RESULTS

The following fungi were isolated:

Ascomycetes

Monascus sp. (case 6, toes)

Chaetomium indicum (case 64, toes)

Fungi Imperfecti

Sphaeropsidales

Phoma sp. or Phyllosticta sp. (case 66, mouth)

Hyphomycetales

Moniliaceae

Epidermophyton floccosum (case 34, toes)

Trichophyton mentagrophytes (case 70, toes)

Sporotrichum sp. (?) (case 15, toes). A somewhat yeastlike form

Sporotrichum sp. (case 40, toes). Spores 1.3 by 2.3 microns

Sporotrichum sp. (case 101, ears). Spores globular, from 4.5 to 5 microns

Aspergillus sp. (case 45, toes). A fumigatus group; conidia subovoid, from 3.2 to 4 microns long; no ascospores

Aspergillus ruber (case 64, toes) except that it lacks the red pigment described for A. ruber

Aspergillus nidulans (case 92, toes). The conidial form; no ascospores

Penicillium sp. (case 53, ears)

Dematiaceae

Sirodesmium sp. (case 79, ears)

Cladosporium sp. (case 1, toes)

Hormodendrum sp. (case 4, mouth)

Hormodendrum sp. (case 100, mouth)

Hormodendrum sp. (case 108, ears)

Hormodendrum sp. (case 109, mouth)

Mycelia Sterilia

Strain 3 (case 3, toes)

Strain 26 (case 26, toes)

Strain 67 (case 67, mouth)

Strain 100 (case 100, mouth)

These fungi produced no spores when grown on carrot, potato, Sabouraud's agar, potato dextrose agar and Czapek's agar

Torulopsidaceae

Parasaccharomyces A (case 81, mouth). Nonpathogenic for rabbits

Parasaccharomyces B (case 34, toes) (case 40, mouth) (case 85, mouth)

Parasaccharomyces F (case 81, mouth)

Parasaccharomyces sp. (case 84, mouth) (case 107, mouth). The organism is identical with Parasaccharomyces B except that it fails to ferment saccharose

Parasaccharomyces sp. (case 95, mouth): The organism is pink, liquefies gelatin, ferments dextrose, maltose and saccharose with a slight amount of acid and fails to ferment levulose, galactose and lactose

Parasaccharomyces sp. (case 105, toes). The organism is greenish black; it fails to ferment sugars

Cryptococcus A (case 79, mouth)

Cryptococcus B (case 81, mouth) (case 83, mouth) (case 109, mouth)

Cryptococcus sp. (case 40, toes) (case 78, toes) (case 109, toes). The organism is from white to cream, ferments dextrose, levulose and saccharose with a slight amount of acid and fails to ferment maltose, galactose and lactose

Twenty-two filamentous fungi, two of which were pathogenic to man, were isolated from the three hundred scrapings. They were obtained in equal numbers from material from male and from female patients. Scrapings from the toes were most productive, yielding twelve fungi, while those from the corners of the mouth produced six and those from the ears only four. The age and race of the patients, the disease and the length of time the patients had been in the hospital had no apparent correlations with the fungi cultured from their skin.

Of the fungi obtained, twenty are known only as saprophytes or plant parasites; there is no evidence indicating that their occurrence on the skin was due to anything more than a chance contamination. Spores as small as these, which are known to be common in the air, could easily become lodged in a small crevice on the surface of the skin and be included in a scraping made from it.

Two of the fungi, E. floccosum and T. mentagrophytes, both obtained from toes, were morphologically identical with the two species commonly obtained from lesions of epidermophytosis of the toes.

Of the yeastlike fungi, five showing mycelia were identified as identical with those previously isolated by Nye, Zerfas and Cornwall [6] from the gastro-intestinal tract, one, Parasaccharomyces A, being a species usually considered pathogenic. Rabbits which received injections of 100,000,000 of the latter showed no untoward symptoms. Of the four unidentified strains, none corresponded to the unidentified Moniliae described by Benham and Hopkins. Of the nine strains, seven were obtained from the corners of the mouth and two from the toes. Of the Cryptococci, Cryptococcus B is probably identical with the organism classified by Benham and Hopkins as "Group IV," whereas Cryptococcus A and the unidentified strain are similar to those classified as "Group I." The four strains similar to strains previously isolated from

6. Nye, R. N.; Zerfas, L. G., and Cornwall, M. A.: The Presence and Importance of Yeastlike Fungi in the Gastrointestinal Tract in Pernicious Anemia, in Other Diseases and in Normal Individuals, Am. J. M. Sc. **175**:153-174, 1928.

the gastro-intestinal tract were all obtained from the corners of the mouth, whereas the unidentified ones were all obtained from between the toes. No Mycodermata as described by Benham and Hopkins were recovered.

In the twenty consecutive cases in which the bacterial flora was studied the bacterial observations were not remarkable except for the fact that Staph. aureus and beta hemolytic streptococci were never recovered from the blood agar plates.

The results of the study were as follows:

Scrapings from the Corners of the Mouth.—Staphylococcus albus was present in all cultures and was usually predominant. Streptococcus viridans was present in nearly all cultures but was rarely predominant. Gram-negative cocci were present in three cultures; gamma type streptococci and Staphylococcus citreus were each observed in one culture.

Scrapings from Behind the Ears.—Staph. albus was present in all cultures, being usually observed in pure culture and being always predominant. Staph. citreus was present in four cultures, and gram-positive bacilli, Str. viridans and diphtheroids were each observed in one culture.

Scrapings from the Toes.—Staph. albus was present in all cultures, being usually observed in pure culture and being always predominant. Gram-positive bacilli were present in four; Staph. citreus, in three, staphylococci with gray colonies, in two, and Str. viridans, in one.

COMMENT

As regards filamentous fungi the results tend to corroborate those of other workers, who found approximately the same percentage of pathogenic fungi on apparently normal toes and probably the same species for the most part, since the names E. inguinale and E. cruris are synonyms for E. floccosum (Ota and Langeron [7]), and since the taxonomy of Trichophyton is at present too confused for great significance to be attached to the fact that Williams reported having observed T. lacticolor whereas we report the presence of T. mentagrophytes.

In our experiments we did not take the history of the patient to determine whether there had been previous infection beween the toes, but we merely selected the patients whose skin appeared normal on clinical examination, since it has been our experience that patients often declare with the greatest conviction that they do not have and never did have lesions of any kind between the toes and yet on examination are found to have definite lesions from which Trichophyton or Epidermophyton can be isolated. It is interesting to note, however, that Corn-

7. Ota, Massao, and Langeron, Maurice: Nouvelle classification des dermatophytes, Ann. de parasitol. **1**:305-336, 1923.

bleet,[2] who took histories of patients and omitted from his series those who reported previous infections of the toes, obtained approximately the same percentage of pathogenic fungi as we did, three of one hundred specimens from toes yielding such fungi in his series, whereas in our series the incidence was two per hundred scrapings from toes.

The number of yeastlike fungi recovered from scrapings of skin other than that of the corners of the mouth was much lower than that reported by Benham and Hopkins. Possibly this may be explained by the fact that the skin was cleansed before it was scraped. The eleven strains obtained from the corners of the mouth, together with the alpha hemolytic streptococci, are best explained as due to contamination with saliva.

Regarding the rôle of pathogenic fungi on normal skin three theories have been suggested: (1) that they may have just been picked up and not have had time to form a lesion; (2) that they may be present in a dormant state between attacks (a theory that is supported by the fact that dermatophytosis of the toes often recurs at intervals), and (3) that they may be present rather commonly on normal skin without causing infection. This last theory is disputed by Burgess,[3] who expressed the belief that such fungi are rarely present on skin without causing characteristic reactions, but the negative results he obtained cannot be considered conclusive in view of the fact that several other workers have observed such fungi on apparently normal skin.

If, then, pathogenic fungi do sometimes occur on normal skin without causing lesions, the problem of how to explain this phenomenon arises. Is it due to conditions adverse to the fungus—either resistance of the skin itself or external conditions of moisture, cleanliness or wounds—or is it due to lowered virulence of the fungus? In this connection the strain of E. floccosum isolated from apparently normal toes in our experiment, which differs culturally from strains of the same species isolated from lesions, may prove to be significant.

SUMMARY

Scrapings from skin from three areas, namely, from behind the ears, from the corners of the mouth and from between the toes on a hundred persons with apparently normal skin were cultured for filamentous fungi, yeastlike fungi and bacteria. Twenty-two filamentous fungi were observed of which twenty are known as saprophytes or plant parasites, and two, E. floccosum and T. mentagrophytes, both isolated from toes, are known as the organisms of epidermophytosis of the toes.

Sixteen yeastlike fungi and innumerable strains of bacteria were obtained, all of which are potentially saprophytic.

STUDIES IN PSORIASIS

I. LIPID PARTITION AND ALBUMIN-GLOBULIN RATIO IN ONE HUNDRED AND THIRTY CASES

II. EFFECT OF ADMINISTRATION OF CHOLESTEROL (TOLERANCE TEST) ON THE LIPID PARTITION AND THE ALBUMIN-GLOBULIN RATIO

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Many efforts to ascertain the basic factors responsible for the psoriatic syndrome have been recorded. Various hypotheses suggested deal with infection,[1] disorders of the nervous system,[2] endocrine dysfunction,[3] malfunction of the skin [1] and faulty lipid metabolism.[4] Recently the latter has received particular attention. Some investigators claim that a rise in the serum lipids is observed;[5] others reported decreases,[6] while still others stated that no definite variations are observed.[7] That such controversial findings should prevail is not beyond expectation. Numerous difficulties are entailed in any attempt to obtain

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1. Grütz, O., and Bürger, M.: Die Psoriasis als Stoffwechselsproblem, Klin. Wchnschr. **12**:373, 1933.

2. Bernhardt, R.: Einige Bemerkungen über Schuppenflechte, Erblichkeit, Stoffwechsel, nervöse Einflüsse, Przegl. dermat. **23**:1, 1928.

3. Neumark, S.: Ueber den Gesamtcholesteringehalt im Blutserum bei einigen Dermatosen im Zusammenhang mit dem Einfluss der endokrinen Drüsen auf die Cholesterinämie, Arch. f. Dermat. u. Syph. **163**:556, 1931.

4. Barreda, P.: Ueber den diagnostischen Wert von Blutcholesterinbestimmungen nach peroraler Cholesterinbelastung, Klin. Wchnschr. **13**:290, 1934. Grütz and Bürger.[1]

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6. Ameisonowna and Lenartowicz: Freie Cholesterin im Blut von Luikern und anderen Hautkranken, Przegl. dermat. **19**:18, 1924; Zentralbl. f. Haut- u. Geschlechtskr. **17**:336, 1925.

7. (*a*) Schaaf, F., and Obtulowicz, M.: Lipidstoffwechsel und Psoriasis, Arch. f. Dermat. u. Syph. **173**:2, 1935. (*b*) Hruszek, H.: Untersuchungen über den Cholesteringehalt des Serums und seine cholesterinolytische Fähigkeit in vitro bei Hautkrankheiten, Klin. Wchnschr. **14**:779, 1935. Barreda.[4]

the necessary cooperation from patients or to standardize the procedures employed. These considerations make this report opportune. It is based on studies which belong to a series of investigations continuously in progress for fifteen years. Methods of analysis and clinical routine have been evaluated carefully and planned to meet available conditions.

I. LIPID PARTITION AND ALBUMIN-GLOBULIN RATIO

The 130 male and female patients examined were for the most part ambulatory and ranged in age from 6 to 69 years. They suffered with psoriasis of different degree, as may be seen from table 1. The types of psoriasis represented are as follows: (1) acute localized, (2) acute generalized, (3) chronic localized, (4) chronic localized with acute exacerbation, (5) chronic generalized, (6) chronic generalized with acute exacerbation, (7) affecting the nails only, (8) pustular. When the types are regrouped on the basis of the extent of scaling, four divisions are recognized: (1) chronic generalized involvement with mild scaling (+), (2) chronic generalized involvement with extensive scaling (+ +), (3) chronic localized involvement with mild scaling and (4) chronic localized involvement with extensive scaling. This gradation was devised because it seemed likely that the degree of involvement clinically discerned might be correlated with the degree of change in the biochemical values for the blood constituents. In all cases in which lesions of more than six months' duration were present the disease was designated as chronic.

It was not possible to obtain blood by the usual early morning postabsorptive venous puncture. Most of the samples of blood were therefore obtained approximately from five to six hours after the patients had taken a light breakfast. When the serum was completely clotted it was separated by centrifugation and stored in the refrigerator over night. Each specimen was analyzed for total lipids, total cholesterol,[8] cholesterol esters,[9] alcohol-ether-soluble phosphorus[10] (otherwise referred to as lipid phosphorus or lecithin, calculated by multiplying the alcohol-ether-soluble phosphorus by 25), albumin[11] and globulin.[11] As already intimated, all methods employed had been carefully standardized and had been used in the accumulation of data for researches previously

8. Krasnow, F., and Rosen, A. S.: A Study of the Myers-Wardell Method for the Determination of Cholesterol, J. Lab. & Clin. Med. **14**:967, 1929.

9. Bloor, W. R., and Knudsen, A.: The Separate Determination of Cholesterol and Cholesterol Esters in Small Amounts of Blood, J. Biol. Chem. **27**:107, 1916.

10. Krasnow, F.; Rosen, A. S., and Porosowska, Y.: The Determination of Lipid Phosphorus, J. Lab. & Clin. Med. **20**:1090, 1935.

11. Greenberg, D. M.: Colorimetric Determination of Serum Protein, J. Biol. Chem. **82**:545, 1929.

TABLE 1.—*Summary of Results of Analyses on Serum from Patients with Psoriasis*

Description of Condition	Number of Cases	Total Lipids, Mg. per 100 Cc.	Cholesterol					Alcohol-Ether-Soluble Phosphorus, Mg. per 100 Cc.	Lecithin, Mg. per 100 Cc.	Protein, Percentage	
			Total, Mg. per 100 Cc.	Esters		Free					
				Milligrams	Percentage of Total	Milligrams	Percentage of Total			Albumin	Globulin
Normal, 1936	33	1,621 ± 149	228 ± 26	152 ± 21	67 ± 5	76 ± 13	33 ± 5	8.0 ± 0.6	200 ± 15	4.38 ± 0.17	2.28 ± 0.19
Chronic generalized	31	1,710 ± 178 (12 cases)	205 ± 25	136 ± 19	66 ± 5	70 ± 15	34 ± 5	8.2 ± 0.7	205 ± 17	4.32 ± 0.24 (29 cases)	2.36 ± 0.28 (29 cases)
Chronic generalized, scaling +	22	1,726 ± 198 (10 cases)	210 ± 22	137 ± 19	66 ± 6	73 ± 15	35 ± 6	8.4 ± 0.6	209 ± 14	4.38 ± 0.27 (21 cases)	2.39 ± 0.29 (21 cases)
Chronic generalized, scaling ++	7	1,630 ± 10 (2 cases)	202 ± 20	137 ± 13	67 ± 4	67 ± 13	33 ± 4	8.1 ± 0.8	202 ± 21	4.20 ± 0.22 (6 cases)	2.32 ± 0.31 (6 cases)
Chronic generalized with acute exacerbation	12	1,636 ± 133 (5 cases)	200 ± 29	129 ± 22	64 ± 7	71 ± 10	37 ± 7	7.8 ± 0.8	195 ± 19	4.71 ± 0.40 (11 cases)	2.41 ± 0.18 (11 cases)
Chronic localized	55	1,736 ± 120 (19 cases)	214 ± 27	138 ± 23	65 ± 6	75 ± 15	35 ± 6	8.2 ± 0.8	205 ± 19	4.33 ± 0.23	2.52 ± 0.26
Chronic localized scaling +	37	1,748 ± 212 (13 cases)	217 ± 32	143 ± 26	66 ± 6	73 ± 16	34 ± 6	8.3 ± 0.9	206 ± 22	4.32 ± 0.22	2.46 ± 0.24
Chronic localized, scaling ++	16	1,710 ± 83 (6 cases)	207 ± 16	127 ± 15	62 ± 6	80 ± 15	38 ± 6	8.1 ± 0.6	202 ± 16	4.37 ± 0.27	2.68 ± 0.23
Chronic localized with acute exacerbation	3	No cases	179 ± 27	111 ± 20	62 ± 3	68 ± 9	38 ± 3	7.0 ± 0.9	175 ± 21	4.12 ± 0.16	2.05 ± 0.05
Involvement of the nails only	8	1,727 ± 209 (3 cases)	172 ± 42	104 ± 31	61 ± 11	67 ± 19	39 ± 11	7.2 ± 1.0	181 ± 25	4.37 ± 0.15	2.34 ± 0.18
Acute generalized	4	1,580 ± 120 (2 cases)	229 ± 36	139 ± 27	61 ± 3	90 ± 10	40 ± 3	8.6 ± 1.4	215 ± 34	4.34 ± 0.15 (3 cases)	2.39 ± 0.12 (3 cases)
Acute generalized, scaling +	4	1,580 ± 120 (2 cases)	229 ± 36	139 ± 27	61 ± 3	90 ± 10	40 ± 3	8.6 ± 1.4	215 ± 34	4.34 ± 0.15 (3 cases)	2.39 ± 0.12 (3 cases)
Acute localized	2	No cases	211 ± 49	99 ± 16	48 ± 4	113 ± 34	52 ± 4	8.4 ± 1.7	210 ± 43	4.21 ± 0.32	2.46 ± 0.01
Acute localized, scaling +	2	No cases	211 ± 49	99 ± 16	48 ± 4	113 ± 34	52 ± 4	8.4 ± 1.7	210 ± 43	4.21 ± 0.32	2.46 ± 0.01
Pustular forms	15	1,743 ± 214 (7 cases)	215 ± 29	138 ± 18	64 ± 7	78 ± 18	36 ± 5	7.8 ± 0.8	195 ± 21	4.35 ± 0.17	2.52 ± 0.23
All types of involvements in children	8	1,485 ± 75 (4 cases)	187 ± 34	128 ± 26	70 ± 6	58 ± 15	30 ± 6	7.8 ± 1.3	195 ± 23	3.98 ± 0.49	2.47 ± 0.23
Psoriasis, all types	130	1,713 ± 176 (48 cases)	208 ± 28	133 ± 23	64 ± 6	74 ± 16	36 ± 6	8.1 ± 0.8	201 ± 20	4.32 ± 0.23 (126 cases)	2.44 ± 0.26 (126 cases)

published.[12] Also, in order that abnormal deviations might be discerned and interpretation with respect to general physiologic levels be possible, the serums from a series of 33 clinically normal persons were analyzed.

The data obtained are summarized in tables 1 and 2. Table 1 lists all averages with the corresponding average deviations. Perusal of these figures yields the following information:

1. The values for total cholesterol for patients with chronic localized psoriasis with acute exacerbation and for those with psoriasis affecting

TABLE 2.—*Distribution of Values for Serum in*

Description of Condition	Number of Cases	Percentage								
		Total Lipids			Cholesterol					
					Total			Percentage of Esters		
		Below Normal Average Range	Within Normal Average Range	Above Normal Average Range	Below Normal Average Range	Within Normal Average Range	Above Normal Average Range	Below Normal Average Range	Within Normal Average Range	Above Normal Average Range
Chronic generalized.....	31	8.3	50.0	41.6	35.5	64.5	0.0	22.6	61.3	16.1
Chronic generalized, scaling +.....	22	10.0	40.0	50.0	31.8	68.2	0.0	31.8	54.5	13.6
Chronic generalized, scaling ++.....	7	0.0	100.0	0.0	42.8	57.2	0.0	0.0	85.7	14.3
Chronic generalized with acute exacerbation...	12	20.0	60.0	20.0	41.6	58.4	0.0	41.6	50.0	8.3
Chronic localized.....	55	5.3	52.6	42.1	43.6	43.6	12.7	30.9	52.7	16.4
Chronic localized, scaling +.....	37	7.7	46.1	46.1	40.5	40.5	19.0	21.6	59.4	19.0
Chronic localized, scaling ++.....	16	0.0	66.7	33.3	56.3	43.7	0.0	56.3	31.2	12.5
Chronic localized with acute exacerbation...	3		No cases		66.7	33.3	0.0	66.7	33.3	0.0
Involvement of the nails only.....	8	0.0	66.7	33.3	75.0	25.0	0.0	37.5	50.0	12.5
Acute generalized.....	4	50.0	50.0	0.0	25.0	50.0	25.0	50.0	50.0	0.0
Acute generalized, scaling +.....	4	50.0	50.0	0.0	25.0	50.0	25.0	50.0	50.0	0.0
Acute localized.....	2		No cases		50.0	0.0	50.0	100.0	0.0	0.0
Acute localized, scaling +.....	2		No cases		50.0	0.0	50.0	100.0	0.0	0.0
Pustular form.....	15	14.3	28.6	52.1	33.3	46.7	20.0	40.0	46.7	13.6
All types of involvement in children.....	8	50.0	50.0	0.0	62.5	37.5	0.0	12.5	50.0	37.5
Psoriasis, all types.....	130	10.4	50.0	39.6	42.3	48.5	9.2	33.8	52.4	13.8

the nails only were comparatively low, namely, 179 ± 27 and 172 ± 42 mg. per hundred cubic centimeters of serum, respectively, as compared with the normal, 228 ± 26 mg. This finding contradicts the observation of Neumark,[3] who claimed that an increase in cholesterol value

12. (*a*) Rosen, I., and Krasnow, F.: Lecithin and Cholesterol Studies in Dermatophytosis, Arch. Dermat. & Syph. **23**:132 (Jan.) 1931; (*b*) Cholesterol and Lecithin Studies of Skin Diseases, ibid. **26**:48 (July) 1932. (*c*) Rosen, I.; Krasnow, F., and Lyons, M. A.: The Lipid Partition and the Albumin-Globulin Ratio in Syphilis, ibid. **29**:707 (May) 1934. (*d*) Rosen, I.; Rosenfeld, H., and Krasnow, F.: Effect of Hyperpyrexia in the Treatment of Chronic Recurrent Dermatoses, ibid. **33**:518 (March) 1936.

existed in patients with localized lesions although the decrease in persons suffering from generalized involvement simultaneously reported is apparently corroborated, since the total cholesterol for the group averaged 205 ± 25 mg.

2. Similarly, table 2 indicates a greater incidence of values for serum cholesterol below average normal range for patients with chronic localized psoriasis with extensive scaling (+ +), for those with acute exacerbation and for those with involvement restricted to the nails.

Psoriasis with Reference to the Normal Range

Distribution of Values												
						Protein, Percentage					
Percentage Free			Alcohol-Ether-Soluble Phosphorus			Albumin			Globulin		
Below Normal Average Range	Within Normal Average Range	Above Normal Average Range	Below Normal Average Range	Within Normal Average Range	Above Normal Average Range	Below Normal Average Range	Within Normal Average Range	Above Normal Average Range	Below Normal Average Range	Within Normal Average Range	Above Normal Average Range
16.1	61.3	22.6	16.1	54.9	29.0	41.4	31.0	27.6	20.7	41.4	37.9
13.6	54.5	31.8	9.1	63.6	27.3	33.3	28.6	38.1	19.0	38.1	42.9
14.3	85.7	0.0	28.6	28.6	42.8	50.0	50.0	0.0	33.3	33.3	33.3
8.3	50.0	41.6	16.7	58.3	25.0	36.4	45.4	18.2	0.0	63.6	36.4
14.6	52.7	32.7	20.0	47.3	32.7	36.4	36.4	27.3	9.1	41.8	49.1
16.2	62.2	21.6	21.6	43.2	35.1	35.1	40.5	24.4	10.8	48.6	40.5
12.5	31.2	56.3	18.8	50.0	31.2	56.3	6.3	37.5	6.3	18.8	75.0
0.0	33.3	66.7	66.7	33.3	0.0	33.3	66.7	0.0	33.3	66.7	0.0
12.5	50.0	37.5	50.0	37.5	12.5	25.0	62.5	12.5	12.5	62.5	25.0
0.0	50.0	50.0	25.0	50.0	25.0	33.3	33.3	33.3	0.0	100.0	0.0
0.0	50.0	50.0	25.0	50.0	25.0	33.3	33.3	33.3	0.0	100.0	0 0
0.0	0.0	100.0	50.0	0.0	50.0	50.0	50.0	0.0	0.0	100.0	0.0
0.0	0.0	100.0	50.0	0.0	50.0	50.0	50.0	0.0	0.0	100.0	0.0
13.3	46.7	40.0	46.7	26.6	26.6	20.0	60.0	20.0	0.0	60.0	40.0
37.5	50.0	12.5	25.0	50.0	25.0	62.5	12.5	25.0	12.5	25.0	62.5
13.1	52.4	34.6	25.4	46.2	28.4	34.9	41.3	23.8	10.3	50.0	39.7

3. It is interesting to note that when the 31 patients with chronic generalized psoriasis were subdivided with respect to degree of scaling and severity of eruption into subgroups showing, respectively, mild scaling (+), more extensive scaling (+ +) and acute exacerbation, the average value for total cholesterol became lower for each successive subgroup.

4. Even more striking was the graded drop in this fraction of lipids when the 55 patients with chronic localized involvement were classified according to the same criteria into subgroups showing chronic localized type of psoriasis with mild scaling, chronic localized type with extensive scaling, and chronic localized type with acute exacerbation, respectively.

5. Furthermore, table 2 indicates that there was a successive increase in the frequency of low values for serum cholesterol content when the three subgroups were considered in the order named.

6. The greatest incidence of markedly reduced serum cholesterol content obtained among persons suffering from lesions of the nails only.

7. The low average value for total cholesterol (table 1) as well as the comparatively frequent occurrence of a value below normal (table 2) in the group of children studied cannot be stressed at this time because thus far it has been impossible to establish the normal level for children.

8. Considered in toto, the 130 patients presented a grand average of 208 ± 28 mg. per hundred cubic centimeters of serum, the individual values being distributed so that 42 per cent fell below the average normal value, 49 per cent within the average normal range and 9 per cent above the average normal range (table 2). It is noteworthy that the results of these analyses simulated closely those obtained on whole blood.[12b] These results are entirely at variance with those of Grütz and Bürger.[1] The high values reported by these authors for total cholesterol could not be corroborated. Only 4 cases of the acute generalized condition have been studied, and the results of that study were not striking.

9. Chronic localized psoriasis with extensive scaling tended to be associated with values for serum globulin above the average normal range (table 2).

10. None of the other constituents (total lipids, free cholesterol, cholesterol esters, lipid phosphorus and albumin) showed any significant variations. Thus the claims of Grütz and Bürger [1] that patients with psoriasis show increased values for lipid P and cholesterol esters also remain unsubstantiated.

In conclusion, then, it appears that the psoriatic process involves hypocholesteremia rather than hypercholesteremia, and this observation substantiates Bernhardt's work.[2] Moreover, the more acute forms effect the more marked decreases. Such a condition would arise if cholesterol is mobilized to affected areas.

II. EFFECT OF ADMINISTRATION OF CHOLESTEROL (TOLERANCE TEST) ON THE LIPID PARTITION AND ON THE ALBUMIN-GLOBULIN RATIO

Various investigators have suggested that psoriasis may be due to a dysfunction of the lipid metabolism. Tolerance tests have been recommended as a measure of ascertaining the difference in total lipid and cholesterol content of serum of normal and psoriatic subjects. Grütz and Bürger [1] claimed that in psoriasis, the cholesterol content does not increase after intake of cholesterol whereas there is an increase in

TABLE 3.—*Percentage Variations of Constituents of Serum After Ingestion of Cholesterol with Reference to Postabsorptive Values*

Analyses			Total Lipids			Cholesterol									Alcohol-Ether-Soluble Phosphorus			Protein, Percentage					
						Total			Percentage of Esters			Percentage Free						Albumin			Globulin		
Tests Made On	Hours After Ingestion	Total Number of Cases Studied	Total Average Variations	Average Increase	Average Decrease	Total Average Variations	Average Increase	Average Decrease	Total Average Variations	Average Increase	Average Decrease	Total Average Variations	Average Increase	Average Decrease	Total Average Variations	Average Increase	Average Decrease	Total Average Variations	Average Increase	Average Decrease	Total Average Variations	Average Increase	Average Decrease
Normal person	4	10	9	10	1	2	4	1	4	10	3	7	5	13	7	9	2	2	4	1	4	5	3
	8		12	0	12	4	6	4	4	5	5	6	9	8	13	16	5	4	6	2	5	6	4
	24		3	2	5	6	2	8	3	6	4	6	7	11	7	6	7	5	5	5	6	0	7
	4, 8, 24 combined		8	9	5	4	4	6	4	7	4	6	7	10	9	12	6	4	5	3	5	6	5
Psoriatic patient	4	10	10	8	7	3	3	6	2	2	4	5	9	5	9	9	10	3	4	4	4	4	6
	8		16	15	17	9	8	9	5	2	5	9	10	3	14	14	16	6	5	7	7	6	8
	24		7	4	11	11	6	14	7	9	6	13	12	16	13	5	14	6	4	10	8	0	8
	4, 8, 24 combined		10	16	14	7	6	11	5	6	5	9	10	9	12	11	13	5	5	8	7	2	8

normal persons when cholesterol is ingested. Low fat diets were introduced in the therapeutic management.[13] Recorded successes appear striking, but forthcoming corroboration does not seem to be universal. It was deemed advisable therefore to check the results independently.

To this end the tests were carried out as outlined by Grütz and Bürger.[1] A postabsorptive sample of blood was drawn from each subject, who was then instructed to ingest 5 Gm. of cholesterol dissolved in 100 Gm. of olive oil, have a light breakfast and continue with the daily duties. After intervals of four, eight and twenty-four hours, respectively, additional specimens were obtained. On the serum from each, analyses were made for total lipids, total cholesterol, cholesterol esters, alcohol-ether-soluble phosphorus, albumin and globulin. The technic for the quantitative determination of these constituents was that generally used in our laboratory. If one assumes that the important consideration is the existence of relative variations, absolute differences in figures from those obtained by other authors would be secondary. Any accurate method used as a routine should indicate any trends of relationship which may exist.

Our series of tolerance tests included 10 clinically normal subjects and 10 psoriatic patients. Comparative findings are given in table 3. In most instances the higher percentage pertained to the group with psoriasis. In general, the effect of intake of cholesterol on the blood constituents studied was extremely slight, the variation from the corresponding postabsorptive content ranging from 0 to 17 per cent and not exceeding 10 per cent in 84 per cent of the subjects observed. Moreover, there was no regularity in the type of curves obtained. These results are contrary to those of Grütz and Bürger [1] and Marquardt [5] but agree with those of Schaaf,[14] Ameisonowna and Lenartowicz,[6] Hruszek [7b] and Barreda.[4] On the basis of this test it is not possible for the present to assume that a disturbance of lipid metabolism is present in cases of psoriasis.

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13. Kantor, A.: Zur Psoriasisbehandlung, München. med. Wchnschr. **82**:634, 1935. Grütz and Bürger.[1] Marquardt.[5]

14. Schaaf, F.: Die Lipidstoffwechsel (mit besonderer Berücksichtigung der Xanthombildung), Zentralbl. f. Haut- u. Geschlechtskr. **35**:1, 1930.

RAPIDITY WITH WHICH SPIROCHAETA PALLIDA INVADES THE BLOOD STREAM

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The question of the rapidity with which Spirochaeta pallida invades the blood stream and the lymph nodes after syphilitic inoculation possesses considerable theoretical and practical importance. The conception of the course of the syphilitic infection, especially in its early stages, has been entirely changed as the result of the discovery that lymph nodes and blood of infected animals may contain spirochetes long before any observable manifestations of syphilis appear.

Uhlenhuth and Mulzer [1] showed as early as 1910 that the lymph nodes of rabbits inoculated intratesticularly are enlarged and contain spirochetes as demonstrated by dark field examination at the time lesions appear in the testicles. The rapidity with which Spirochaeta pallida reaches the lymph nodes from the initial focus of infection has been studied extensively by Brown and Pearce.[2] They obtained positive results by infecting normal animals intratesticularly with an emulsion of lymph nodes of rabbits excised forty-eight hours after the introduction of a small piece of syphilitic tissue under the skin of the scrotum. Eberson [3] observed that the inguinal lymph nodes of rabbits are invaded seven days after inoculation. More recently Kolle and Evers [4] showed that the lymph nodes contain spirochetes one-half, one, two, seven and twenty-four hours after inoculation. They were also able to demonstrate the presence of spirochetes in lymph nodes of guinea-pigs five minutes after inoculation. Similar investigations by Uhlenhuth and Mulzer [5] in 1910 established that an invasion of the blood stream also

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Contribution from the Dermatological Research Laboratories, Philadelphia.

1. Uhlenhuth, P., and Mulzer, P.: Atlas der experimentellen Kaninchensyphilis, Berlin, Julius Springer, 1914, p. 19, table 12, fig. 2.

2. Brown, W. H., and Pearce, L.: A Note on the Dissemination of Spirochaeta Pallida from the Primary Focus of Infection, Arch. Dermat. & Syph. **2**:470-472 (Oct.) 1920.

3. Eberson, F.: Dissemination of Spirochaeta Pallida in Experimental Syphilis, Arch. Dermat. & Syph. **3**:111-116 (Feb.) 1921.

4. Kolle, W., and Evers, E.: Experimentelle Studien über Syphilis und Rekurrensspirochätose, Deutsche med. Wchnschr. **26**:1075-1076 (June 25) 1926.

5. Uhlenhuth and Mulzer,[1] p. 28, table 28, fig. 3.

takes place soon after infection. Reasoner [6] found it possible in one case to transmit the disease to a normal animal with defibrinated blood seventeen days before the lesion could be palpated in the inoculated rabbit. Brown and Pearce [2] and Eberson [3] showed that the blood of rabbits inoculated intratesticularly with syphilitic material becomes infectious as early as seven days after inoculation. Uhlenhuth and Mulzer [7] showed that the blood of patients with the primary stage of syphilis, even during the primary seronegative stage, is infectious in about 84.2 per cent of cases. Evidence has been presented by Arzt and Kerl [8] that the blood may be infectious as early as two or three weeks after infection. One must, however, resort to the experimental method to determine precisely the interval elapsing between infection and the invasion of the blood stream.

The question of infectiousness of the blood in human syphilis has become of acute importance in recent years in connection with the possibility of transmitting syphilis by blood transfusion. A number of interesting cases has been described, of which we cite a few.

The first case of syphilis transmitted by blood transfusion was Dade's case reported by Fordyce [9] in 1915. Later Bernheim [10] reported a case in which a son, acting as donor, transmitted syphilis to his father, who was suffering from pernicious anemia. Two cases of transmission were reported by Brem.[11] Another case in which early transmission occurred under rather unusual circumstances was reported by Spillmann and Morel.[12] In the case of a pregnant woman with uterine hemorrhage a physician acted as donor since the husband refused to give his blood. During the transfusion it was necessary to clean the needles; apparently they were exchanged when replaced, and the one used for the patient was inserted in the physician's vein. About two months after he noticed a rash on his body and the Wassermann reaction was found to be

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6. Reasoner, M. A.: Some Phases of Experimental Syphilis with Special Reference to the Question of Strains, J. A. M. A. **67**:1799-1805 (Dec. 16) 1916.

7. Uhlenhuth, P., and Mulzer, P.: Weitere Mitteilungen über die Infektiosität des Blutes und anderer Körperflüssigkeiten syphilitischer Menschen für das Kaninchen, Berl. klin. Wchnschr. **50**:769-775, 1913; Weitere Mitteilungen über Ergebnisse der experimentellen Syphilisforschung, ibid. **50**:2031-2035, 1913.

8. Arzt, L., and Kerl, W.: Ueber Spirochätenbefunde im Blute von Frühluetikern, Dermat. Ztschr. **32**:199-209, 1921.

9. Fordyce, J. H.: Some Problems in the Pathology of Syphilis, Am. J. M. Sc. **149**:781-808, 1915.

10. Bernheim, B. M.: Blood Transfusion, Hemorrhage, and the Anemias, Philadelphia, J. B. Lippincott Company, 1917, p. 62.

11. Brem, W. V., in discussion on Giffen, H. Z., and Haines, S. F.: A Review of a Group of Professional Donors, J. A. M. A. **81**:532-535 (Aug. 18) 1923.

12. Spillmann, L., and Morel: Un cas de syphilis veineuse d'emblée, Bull. Soc. franç. de dermat. et syph. **33**:452, 1926.

positive. There was no history of sexual contact, and no primary lesion could be detected. The woman died soon after the transfusion, but the husband admitted that six years previously he had a lesion on the penis which healed after he received four injections of arsphenamine. After this report several others appeared in the literature, such as those of Levy and Ginsburg,[13] Feldman [14] and Constantinescou and Vatamanu.[15] An interesting case was described by Dufour.[16] In a woman roseola and a positive Wassermann reaction of the blood developed two and a half months after she received a transfusion. Both she and her husband, who was the donor, had negative reactions before the transfusion. This shows the possibility of transmission of syphilis through the blood when the Wassermann reaction is negative. Cases of the transmission of syphilis by blood transfusion have also been reported by Schulmann,[17] Aubertin and Fleury,[18] Gougerot and others,[19] Hudelo,[20] Polayes and Lederer,[21] Cordiviola,[22] Pinard and Robert,[23] Post and Cooney,[24] Cummer,[25] Carnot, Caroli and Maison,[26] Jones and others,[27] Perin and Lefèvre,[28] Morgan,[29] Rossi and Romero [30] and others.[31] The latest cases reported in the literature are those of Mandelbaum and Saperstein [32] and Pautrier.[33]

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13. Levy, I. I., and Ginsburg, L.: Syphilis Transmitted by Transfusion: Report of a Case, Am. J. Syph. **11**:447-449 (July) 1927.

14. Feldman, V. J.: Syphilis d'emblée: Report of Two Cases, Arch. Dermat. & Syph. **18**:380-382 (Sept.) 1928.

15. Constantinescou, E., and Vatamanu, N.: Un cas de syphilis d'emblée par transfusion sanguine, Ann. d. mal. vén. **24**:161-165 (March) 1929.

16. Dufour, H.: Transfusion sanguine et syphilis, Bull. et mém. Soc. méd. d. hôp. de Paris **53**:511-514 (May 6) 1929; J. de méd. de Paris **48**:901 (Oct. 24) 1929.

17. Schulmann, E.: La syphilis sans chancre, Prat. méd. franç. **8**:393-404 (Sept.) 1929.

18. Aubertin, C., and Fleury, J.: Syphilis après transfusion sanguine, Bull. et mém. Soc. méd. d. hôp. de Paris **54**:69-75 (Jan. 27) 1930.

19. Gougerot, Fiessinger, Bruno and Dally: Deux cas de syphilisation par transfusion pour rajeunissement, Ann. d. mal. vén. **26**:174-178 (March) 1931; Bull. Soc. franç. de dermat. et syph. **37**:1276-1278 (Dec.) 1930.

20. Hudelo, M., in discussion on Gougerot, Fiessinger, Bruno and Dally.[19]

21. Polayes, S. H., and Lederer, M.: The Transmission of Syphilis by Blood Transfusion, Am. J. Syph. **15**:72-80 (Jan.) 1931.

22. Cordiviola, L. A.: Sifilis por transfusion sanguinea, Semana méd. **1**:43-54 (Jan. 7) 1932.

23. Pinard, M., and Robert, P.: Metrorragies de la puberté, transfusion, syphilis consecutive, Bull. et mém. Soc. méd. d. hôp. de Paris **48**:214-217 (Feb. 22) 1932.

24. Post, C. D., and Cooney, G. C.: Accidental Transmission of Syphilis by Blood Transfusion, J. A. M. A. **100**:258-259 (Jan. 28) 1933.

(Footnotes continued on next page)

It was stated, however, by McNamara [34] that the blood of persons with the tertiary stage of syphilis is definitely not infectious. As will be pointed out later, this opinion is not supported by our experimental findings, although our material on this point is as yet limited.

It has therefore seemed of interest to us to establish with some degree of precision the earliest instant at which the blood of a rabbit inoculated with syphilis becomes infectious, and to this end a series of experiments was undertaken, of which we now report the results. A second phase of our experiments had as its object to determine the concentration and the amount of blood of a syphilitic rabbit necessary to produce infection when injected intratesticularly into a normal rabbit. A third set of experiments was performed in an attempt to determine whether the blood of infected rabbits may not be rendered noninfectious by a suitable treatment. The results of the three series of experiments are reported in tables 1, 2 and 3.

The technic of our experiments was as follows:

In order to produce syphilitic infection in rabbits an emulsion of Spirochaeta pallida of the Nichols strain was injected into both testicles. Active lesions containing spirochetes were observed in the testicles at the usual period of from four to eight weeks. The blood of infected rabbits was then examined at various periods before the appearance of lesions and later, by the inoculation method. For this purpose, whole blood, usually in the amount of 0.5 cc., was again injected into one or both testicles of a normal rabbit. The animal was observed for a period of six months. If no lesions appeared during this time it was concluded that no

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25. Cummer, C. L.: Transfusion Syphilis, Am. J. M. Sc. **185**:787-789 (June) 1933.

26. Carnot, P.; Caroli, J., and Maison, E.: Syphilis décapitée par transfusion sanguine, Bull. et. mém. Soc. méd. d. hôp. de Paris **50**:411-415 (March 19) 1934.

27. Jones, H. W.; Rathmell, T. K., and Wagner, C.: The Transmission of Syphilis by Blood Transfusion, Am. J. Syph. & Neurol. **19**:30-38 (Jan.) 1935.

28. Perin, M. L., and Lefèvre, M.: Transmission de la syphilis par voie sanguine. Contamination syphilitique d'une fillette à la suite de transfusions sanguines d'origine maternelle, Bull. Soc. franç. de dermat. et syph. **42**:954-957 (June) 1935.

29. Morgan, H. J.: Factors Conditioning the Transmission of Syphilis by Blood Transfusion, Am. J. M. Sc. **189**:808-813 (June) 1935.

30. Rossi, R., and Romero, R. L.: Secondary Syphilis Due to Transmission: Case, Rev. Asoc. méd. argent. **49**:685-689 (May) 1935.

31. Syphilis Transmitted by Blood Transfusion, foreign letters, J. A. M. A. **93**:931 (Sept. 21) 1929.

32. Mandelbaum, H., and Saperstein, A. N.: Transmission of Syphilis by Blood Transfusion: A Case of Acute Gummatous Osteomyelitis, J. A. M. A. **106**:1061-1063 (March 28) 1936.

33. Pautrier, L. M.: Syphilis décapitée, par transfusion sanguine, Bull. Soc. franç. de dermat. et syph. **43**:503-505 (March) 1936.

34. McNamara, W. L.: Noninfectivity of Blood in Tertiary Syphilis, Am. J. Syph. **9**:470-478 (July) 1925.

spirochetes were present in the blood. The appearance of lesions containing spirochetes, on the other hand, was taken as proof of the presence of spirochetes in the blood which was injected into the animal.

Table 1 deals with the study of the concentration and the amount of blood of syphilitic rabbits necessary to produce infection. It is seen that dilutions of from 1:10 to 1:10,000 failed to produce infection even when as much as 0.5 cc. was injected into each testicle. Positive results were obtained only when whole blood or a 1:2 dilution was used, as small an amount as 0.1 cc. (0.05 cc. of whole blood) being sufficient to produce lesions in the inoculated rabbits. In all our experiments, therefore, undiluted blood was used and the amount injected was 0.5 cc. into each testicle.

TABLE 1.—*Tests to Determine the Concentration and the Amount of Blood from a Syphilitic Rabbit Necessary to Induce Syphilis in a Normal Rabbit, When Injected Intratesticularly*

Rabbit Number	Concentration of Blood Injected	Amount of Blood Injected	Results *
4186	1:10,000	0.5 cc. in each testicle	Negative
4187	1:1,000	0.5 cc. in each testicle	Negative
4188	1:100	0.5 cc. in each testicle	Negative
4189	1:10	0.5 cc. in each testicle	Negative
4501	1:2	0.1 cc. in right testicle	+4
4504	1:2	0.1 cc. in right testicle	+4
4507	1:2	0.1 cc. in right testicle	+4
4481	Whole blood	0.1 cc. in each testicle	Negative
4500	Whole blood	0.1 cc. in right testicle	+4
4503	Whole blood	0.1 cc. in right testicle	+4
4482	Whole blood	0.2 cc. in each testicle	+4
4190	Whole blood	0.5 cc. in each testicle	+4
4484	Whole blood	0.5 cc. in right testicle	+4
4584	Whole blood	0.5 cc. in right testicle	+4
4502	Whole blood	0.5 cc. in right testicle	+4
4505	Whole blood	0.5 cc. in right testcile	+4

* Negative indicates absence of lesions and spirochetes; +4 indicates presence of numerous active spirochetes in the lesions.

Table 2 gives the results of our study of the interval elapsing between the infection of the rabbit and the appearance of spirochetes in the blood stream. Rabbits were inoculated intratesticularly with an emulsion of Spirochaeta pallida, and the blood was taken either from the heart or from the ear of the animal at various intervals of time—five, ten, fifteen, thirty minutes, one, five, twenty-four, forty-eight and seventy-two hours, one, two, three, four, five, seven, ten weeks, three months and one year after inoculation.[34a] A study of table 2 discloses the striking result that the blood of the inoculated animal became infectious as early as five minutes after inoculation. (It has been established by previous investigators that infectivity takes place not later than seven

34a. Since this was written, the presence of spirochetes was demonstrated in the blood of a rabbit six months after infection, and in that of one two and a half years after infection.

days after inoculation.) It thus appears that the rapidity of invasion of the blood stream completely parallels the speed of penetration into lymph nodes, as established by Kolle.

One notes further that the blood remains infectious in about 50 per cent of the animals as late as six months, one year and two and a half

TABLE 2.—*Tests to Determine the Time When Spirochetes Appear in the Blood of Rabbits Which Were Inoculated Intratesticularly with Syphilitic Material*

Rabbit Number	Amount of Whole Blood Injected	Lapse of Time After Inoculation Before Blood Becomes Infective	Results *
4925	0.5 cc. into each testicle	5 minutes	+4
4926	0.5 cc. into each testicle	5 minutes	+4
4923	0.5 cc. into each testicle	10 minutes	+4
4924	0.5 cc. into each testicle	10 minutes	+4
4969	0.5 cc. into each testicle	10 minutes	+4
4889	0.5 cc. into each testicle	15 minutes	+4
4973	0.5 cc. into each testicle	15 minutes	+4
4650	0.5 cc. into right testicle	15 minutes	Negative
4890	0.5 cc. into each testicle	30 minutes	+4
4891	0.5 cc. into each testicle	30 minutes	+4
4654	0.5 cc. into right testicle	1 hour	+4
4658	0.5 cc. into right testicle	5 hours	+4
4892	0.5 cc. into each testicle	24 hours	+4
4893	0.5 cc. into each testicle	24 hours	+4
4662	0.5 cc. into right testicle	24 hours	Negative
4894	0.5 cc. into each testicle	48 hours	+4
4895	0.5 cc. into each testicle	48 hours	Negative
4666	0.5 cc. into right testicle	48 hours	Negative
4670	0.5 cc. into right testicle	72 hours	+4
4500	0.5 cc. into each testicle	1 week	+4
4510	0.5 cc. into each testicle	2 weeks	Negative
4515	0.5 cc. into each testicle	2 weeks	+4
4534	0.5 cc. into each testicle	3 weeks	+4
4539	0.5 cc. into each testicle	3 weeks	+4
4544	0.5 cc. into each testicle	4 weeks	+4
4549	0.5 cc. into each testicle	4 weeks	+4
4565	0.5 cc. into each testicle	5 weeks	Negative
4570	0.5 cc. into each testicle	5 weeks	+4
4598	0.5 cc. into right testicle	7 weeks	+4
4599	0.5 cc. into right testicle	10 weeks	+4
4600	0.5 cc. into right testicle	10 weeks	+4
4713	0.5 cc. into right testicle	3 months	+4
4720	0.5 cc. into right testicle	3 months	Negative
4626	0.5 cc. into right testicle	1 year	+4
4632	0.5 cc. into right testicle	1 year	Negative

* Negative indicates absence of lesions and spirochetes; +4 indicates presence of numerous active spirochetes in the lesions.

years after inoculation, at which time all the lesions have disappeared. The material on this phase of our work is as yet not large, but the experiments are being continued. These preliminary observations are not in agreement with the opinion expressed by Eberson and Engman [35] and by McNamara [34] that the blood is infectious only during the early stages of

35. Eberson, F., and Engman, M. F.: An Experimental Study of the Latent Syphilitic as a Carrier, J. A. M. A. **76**:160-163 (Jan. 15) 1921.

the syphilitic infection. Prior to their study Uhlenhuth and Mulzer [36] and Frühwald [37] reported that some positive results were obtained when the blood of persons with latent syphilis was injected into rabbits. As a consequence it would appear that a person with tertiary syphilis should not be considered as a donor in cases of blood transfusions.

Table 3 summarizes data on experiments in which infected rabbits were treated with an intravenous injection of neoarsphenamine in doses of 0.040, 0.020 and 0.005 Gm. per kilogram of body weight. Blood was taken thirty minutes after inoculation, to determine the presence of

TABLE 3.—*Study of the Blood of Rabbits Inoculated with Spirochaeta Pallida and Treated (A) After Lesions Have Appeared and (B) Shortly After Infection*

Rabbit Number	Intervals of Time at Which Blood Was Taken from Treated Rabbits	Amount of Whole Blood Taken After Rabbit Was Treated, Cc.	Results Negative	Results Positive	Comment
4675	1 week	0.5	—		(A) Rabbits with large lesions of the testicles and blood that contained spirochetes were treated with 0.04 Gm. of neoarsphenamine; the blood of these rabbits was then injected into the testicles of normal rabbits one and two weeks after treatment
4676	1 week	0.5	—		
4677	1 week	0.5	—		
4678	1 week	0.5	—		
4679	2 weeks	0.5	—		
4680	2 weeks	0.5	—		
4681	2 weeks	0.5	—		
4682	2 weeks	0.5	—		
4901	2 hours	1	—		(A) Rabbits with large lesions of the testicles and blood that contained spirochetes were treated with 0.02 Gm. of neoarsphenamine; the blood of these rabbits was then injected into the testicles of normal rabbits one and two weeks after treatment
4902	2 hours	1	—		
4903	4 hours	1	—		
4904	4 hours	1	—		
4905	24 hours	1	—		
4906	24 hours	1	—		
4907	48 hours	1	—		
4908	48 hours	1	—		
4984	15 minutes	1	—		(B) Blood was taken 30 minutes after intratesticular inoculation of a rabbit with syphilitic emulsion in order to establish the presence of spirochetes in the blood before treatment; this was followed by an intravenous injection of 0.005 Gm. of neoarsphenamine per kilogram of body weight; the blood of this animal was then injected into the testicles of normal rabbits at intervals varying from 15 minutes to 5 weeks after treatment
4985	30 minutes	1	—		
4988	1 hour	1	—		
4990	3 hours	1	—		
5007	24 hours	1	—		
5017	1 week	1	—		
5026	2 weeks	1	—		
5034	3 weeks	1	—		
5040	4 weeks	1	—		
5042	5 weeks	1	—		

spirochetes, and also at various intervals after treatment. It is seen that the result of the treatment was to render the blood noninfectious in the cases studied.

36. Uhlenhuth, P., and Mulzer, P.: Gelungene Verimpfung von Blut, Blutserum und Sperma syphilitischer Menschen in die Hoden von Kaninchen, Berl. klin. Wchnschr. **49**:152, 1912.

37. Frühwald, R.: Zur Frage der Infektiosität des Blutes Syphilitischer, Wien. klin. Wchnschr. **25**:584, 1912; Ueber Infektiosität des Blutes im latenten Stadium der erworbenen Syphilis, Dermat. Wchnschr. **59**:1319, 1914; Ueber Infektiosität des Blutes bei latenter (erworbener) Syphilis mit negativer Wassermannscher Reaction, ibid. **60**:513-517, 1915.

It should be noted that in our experiments, in order to eliminate the possibility of the positive results being due to spontaneous rabbit spirochetosis, blood was taken before inoculation and injected intratesticularly into normal rabbits. The results were always negative.

The same method of investigation was used in a preliminary study of the blood of seven syphilitic patients. The presence of Spirochaeta pallida was determined by inoculating rabbits intratesticularly with the patient's defibrinated blood. Of the six untreated patients with secondary syphilis, the blood of one who had a rash on the body gave positive results in the inoculated rabbits. Positive results were obtained also in the case of a patient with a treatment-resistant infection reported by Beerman.[38] That patient received a total of 5.4 Gm. of various arsenicals, and tests of the infectivity of his blood as determined by experiments with animals in this laboratory yielded positive results. The strain which produced that infection has been preserved by us for the past three and a half years.

CONCLUSIONS

The results of our experiments indicate that when Spirochaeta pallida is inoculated into the testicles of rabbits it immediately enters the blood stream. From then on spirochetes continue to multiply at the site of inoculation and to invade the blood, rendering it infectious.

Spirochetes were present in the blood stream for at least six months; after that time they began to diminish in number and could be demonstrated by the inoculation method in only about 50 per cent of animals.

By the same method spirochetes were observed in the blood of animals with a syphilitic infection one year and two and a half years old.

While spirochetes could not be seen in the blood by the dark field illumination method, they were sufficiently numerous to cause syphilis when as little as 0.05 cc. of whole blood was inoculated intratesticularly. For the purpose of greater accuracy a considerably larger quantity, namely, 0.5 cc., of the blood was used. This was invariably sufficient to cause syphilis in the rabbit.

Spontaneous rabbit spirochetosis was ruled out in appropriate control experiments.

While our observations definitely prove that the blood is infective immediately after inoculation and long before the appearance of primary lesions, further work will be necessary in order to establish the infectivity four or five months and longer after inoculation.

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38. Beerman, H.: The Problem of Treatment-Resistant Syphilis, Am. J. Syph., Gonor. & Ven. Dis. **20**:165-206 (March); 296-334 (May) 1936.

Our observations should suggest to experimenters in this field the necessity of caution in considering the question of the presence of spirochetes in various organs of the animal body, unless all traces of the blood which may contain spirochetes are carefully removed.

A review of the literature indicating an increased incidence of syphilitic infections due to blood transfusion forces one to consider these experiments as a warning against the reliance on the negativity of the Wassermann reaction alone. Some donors who have spirochetes in the blood may show a negative Wassermann reaction and no visible manifestations of syphilis because their infection is in the early seronegative stage. In others the infection may be in the latent stage, when visible signs of syphilis are absent and occasionally the Wassermann reaction is negative. However, the presence of spirochetes in the blood of rabbits a year and even two and a half years after infection, when all lesions have disappeared, calls for reconsideration of the noninfectivity of the blood in latent syphilis.

While our experiments on the problem of treatment have not progressed far enough, it appears that a comparatively small dose of an arsenical compound may be sufficient in the earliest stage of the disease to free the blood stream temporarily from the spirochetes.

UNUSUAL CASE OF CUTANEOUS TUBERCULOSIS

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In discussing any cutaneous disorder attributed to the tubercle bacillus one enters a field full of controversy.

There are, unquestionably, certain dermatologic conditions which have a tuberculous etiology, yet there are many others grouped under the heading of tuberculids as to the proper classification of which there may be reasonable doubt.

Therefore, in this article my aim is to keep to the generally accepted ideas pertaining to the subject.

Darier [1] makes the following statement:

> There are but two characters of absolute scientific value permitting the assertion that a cutaneous lesion is tuberculous—they are:
>
> (1) The presence of the bacillus of Koch in the lesion;
>
> (2) The positive result of inoculation of the diseased tissue into animals, particularly the guinea-pig.

One may supplement this statement by adding a third criterion, i.e., the recovery of tubercle bacilli in culture mediums inoculated with material from the questionable lesion.

In addition to these unquestionable diagnostic criteria there are other points to be looked for, and when several are present, they may be offered as presumptive evidence of a tuberculous etiology: These points are as follows: (1) the focal reaction of the lesion itself to the subcutaneous injection of tuberculin A of Koch. This is of great value when present; (2) a histologic structure conforming to that of certain tuberculous lesions; (3) definite clinical aspect, an evolution and some special etiologic circumstances; (4) the coexistence of unquestionable tuberculous symptoms.

Franck [2] grouped five types of lesions of tuberculous etiology under the generic name of cutaneous tuberculosis. All these types fulfil all the conditions listed. They are: tuberculous ulcers, verrucous tuberculosis, tuberculous gumma, fungous tuberculosis and lupus vulgaris.

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1. Darier, J.: Practice of Dermatology, Philadelphia, Lea & Febiger, 1920.
2. Franck, G.: A Contribution to the Pathogenesis and Etiology of Cutaneous Tuberculosis, Urol. & Cutan. Rev. **38**:485-491 (July) 1934.

In addition to these disorders, which unquestionably have a tuberculous etiology, there are many other conditions which conform so closely to the presumptive diagnostic criteria that they are called tuberculids.

It is well to mention at this point the necessity of keeping the possibility of cutaneous tuberculosis in mind, even when certain clinical data point to a different diagnosis. This is exemplified in the following case report.

REPORT OF A CASE

H. P., a 27 year old Negro, was admitted to the United States Marine Hospital in Baltimore on April 25, 1935, at 10 a. m., because of an abscess of the thoracic wall. The history revealed that he was employed on the S.S. *Alleghany* as a barber's helper. He was a moderate user of alcohol and tobacco, and stated that he did not use drugs. His father died at the age of 50; the cause of his death was unknown. His mother and sister were living and well. There was no history of any familial diseases. During childhood the patient had measles, chickenpox and whooping cough. According to the history he had never undergone an operation. He sustained an injury to the upper part of his sternum fifteen years before admission to the hospital. Twelve years before he had had gonorrhea and chancres, for which he had received no treatment, and a bubo on the left side, which had been incised and drained.

His chief complaint at the time of admission was a "swelling on his chest." He stated that about fifteen years before while he was playing he fell on a brick and struck the upper part of the sternum. Since that time he had noted that that region was sensitive to the slightest injury. He stated that on Dec. 25, 1934, he was hit on the sternum by a fist which had a twisting motion. At that time he felt a slight pain in the area, which soon disappeared.

About two weeks later swelling was noted over the region. It was not painful but continued to increase in size slowly and progressively. Three months after the second injury was sustained the swelling became painful, and the patient was advised to come to the hospital for examination and treatment. Since that time the pain had been more severe at night and seemed to be aggravated when the patient was in a recumbent position. He expressed the belief that there was more of a prominence on that area when he was lying down.

There was no cough, dyspnea, palpitation, precordial pain or complaint referable to the heart or the respiratory system. There was no gastro-intestinal disturbance. Nocturia occurred one time each night. The average weight ranged between 125 and 130 pounds (56.7 and 59 Kg.). On admission the weight was 127 pounds (57.6 Kg.).

The physical examination revealed a young Negro who was ambulant, was well developed and well nourished and did not appear to be ill. His head was average in size and shape for the race. There was no evidence of any external injury or of developmental defects.

The pupils were equal and regular and reacted to light and in accommodation. A small hard nontender swelling was noted on the outer side of the left upper lid.

There was no obstruction in, and no discharge from, the nose; hearing was normal, and there was no aural discharge; the teeth were in fairly good condition. The tongue was not coated, and it protruded in the midline. There was no tremor. The tonsils were small but normal. There was no cervical adenopathy; the thyroid was not enlarged, and no abnormal pulsations or tracheal tug was noted.

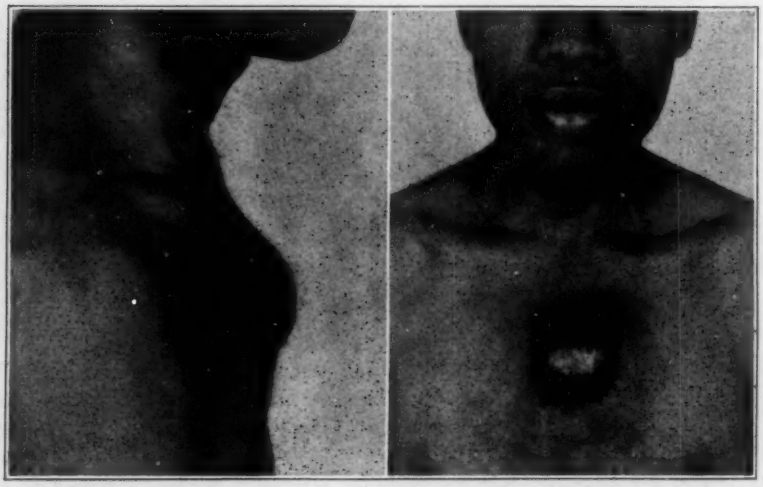
The chest expanded symmetrically on respiration. Overlying the sternum at the manubrial articulation there was a small protruding mass about 7 by 7 by 5 cm. The skin covering the mass was light over the central portion and dark around the periphery. The mass was soft and fluctuant on palpation. Around the base there was a hard infiltration. There was much tenderness over the marginal area, and no pulsation or bruit was noted. The manubrium seemed to protrude somewhat forward over this area, the protrusion being more marked than one would expect in a 27 year old man.

The lungs were essentially normal.

The point of maximum cardiac intensity was in the left fifth intercostal space at the midclavicular line. The rate, the rhythm and the sounds were normal. No murmurs were noted.

The blood pressure in both arms was 130 systolic and 76 diastolic.

The genitals were normal in size, but there was a redundant prepuce; a purulent urethral discharge and an acute balanitis were present.



Lesion of cutaneous tuberculosis on an area previously injured.

Laboratory examinations disclosed the following facts: The urine contained numerous pus cells and a trace of albumin, and the specific gravity was 1.010. The blood count showed 4,300,000 red cells, 8,800 white cells and 85 per cent hemoglobin. The Kahn reaction was 4 plus (80 units). A smear of material from the urethra showed gonococci. A tuberculin test gave a positive reaction with a 1 : 50,000 dilution.

The report on roentgenograms of the chest taken in the anteroposterior and in the lateral position was as follows: "The lungs are entirely clear throughout. The heart and aorta are normal in size. The mitral area of the heart is slightly prominent. There is no evidence of any aneurysm. There is a prominence over the upper portion of the sternum. No change can be seen in the sternum or in the ribs beneath the prominence."

The patient was seen by members of the surgical staff, who recommended that the abscess be incised and drained. The etiology was questioned. In view of the positive Kahn reaction and the frequency with which syphilitic lesions are noted in that region, syphilis could, of course, not be ruled out.

On April 29, or four days after admission, the abscess was incised and drained, the site being under local anesthesia, and approximately 2 ounces (56.8 cc.) of pus and caseous matter was removed. At that time it was demonstrated that the abscess was superficial and did not extend to the skeletal structures.

A culture of the purulent material was made on an egg medium recommended by Jensen [3] for the growth of tubercle bacilli. At the same time material for a biopsy was taken and sent to the National Institute of Health. On May 9, 1935, the laboratory reported that a growth was present on the culture medium, and staining showed acid-fast bacilli which had the appearance of tubercle bacilli. On May 7, 1935, the following report was received from the National Institute of Health: "The specimen represents a mass of tuberculous granulation tissue showing many typical tubercles and an extensive area of caseous necrosis."

Subsequent Kahn examinations of the blood were reported to show a 4 plus reaction, and a routine examination of the spinal fluid, which is done in all cases of syphilis, was reported to show 8 cells per cubic centimeter, a slight increase in the globulin content, a mastic curve of 21111 and a 2 plus Kahn reaction.

The patient was given antisyphilitic therapy which consisted of neoarsphenamine and bismuth. At the same time the lesion was treated locally with ultraviolet radiation given for one and a half minutes at the beginning, the time of exposure being increased each day by one-half minute until a maximum exposure of fifteen minutes a day was reached. Treatment was continued during the patient's stay in the hospital. He received twenty-one intramuscular injections of 1 cc. of a solution of a bismuth preparation and sixteen intravenous injections (0.6 mg.) of neoarsphenamine.

He was discharged from the hospital on Aug. 31, 1935, the lesion being almost healed. At that time the Kahn reaction was 2 plus.

COMMENT

It is at once evident that the primary interest in this case is from the standpoint of differential diagnosis. A 27 year old Negro had a soft tumor mass, 7 by 7 by 5 cm., over the sternum at the manubrial junction. He had sustained an injury to this region fifteen years before admission. The region had been tender, but no swelling had been present until a second injury to the part was sustained, exactly four months before admission. The swelling had developed since the second injury. The patient expressed the belief that the pain, which at no time was severe, was more pronounced when he was in the recumbent position. Furthermore, it was his belief that the swelling was more pronounced while he remained in that position. The patient also stated that he had a chancre twelve years before admission and had received no treatment although the Kahn reaction was 4 plus (80 units). The appearance of the protruding lesion was striking in that the margin was tender and firm around the periphery. The skin at the periphery of the lesion was much darker than that over the surrounding thoracic wall. The skin over the dome of the lesion was lighter than that over the normal structures. Beneath the light skin one could detect fluctuation.

3. Jensen, cited by Holmes, Evelyn M.: The Value of Culture in the Solution of Problems of Tuberculosis, J. State Med. **42**:559-574 (Oct.) 1934.

In making a differential diagnosis of such a lesion one would probably think of the following conditions: (1) simple superficial abscess of the thoracic wall, (2) osteomyelitis of the manubrium, (3) aortic aneurysm, (4) syphilitic gumma and (5) tuberculous gumma.

The first possibility was that of a superficial abscess resulting from infection by some pyogenic organism of a contused region of the thoracic wall. On the basis of that etiology one would have expected the lesion to develop within less than four months after the injury. Also more pain and discomfort and local tissue reaction would have been present. Some fever and a higher leukocyte count would have been expected. Instead the lesion developed slowly, was localized and produced only slight systemic reactions.

The second condition to be considered was aortic aneurysm. This possibility could be immediately discarded even though aortic aneurysms frequently manifest themselves as a bulge in the first, second and third intercostal spaces to the right of the sternum and are often accompanied by a 4 plus Kahn reaction. However, no tracheal tug or expansile pulsation or thrill was felt; no bruit or abnormal cardiac sounds were heard. The blood pressure was essentially the same in the two arms, and, lastly, no evidence of an aneurysm was seen on fluoroscopic and on roentgenographic examination.

Owing to the location of the lesion immediately over the manubrium and to the history, one might have considered the possibility of an infection involving the skeletal structure. However, osteomyelitis would likely have produced more pain and leukocytic and febrile reaction as well as changes discernible by roentgen examination, and none of these features was present.

Of the more common conditions left, syphilis and tuberculosis were to be considered. In favor of syphilis were a history of a chancre twelve years before admission and the fact that the patient had received no therapy and had a 4 plus Kahn reaction. One at once recognized the similarity between the lesion in this case and the description of a cutaneous syphilitic gumma as given in textbooks.

> The lesion [gummatous syphilid] is usually single, very often unilateral, and is no more than a giant type of nodular syphilid. It is a tumor-like growth more deeply situated than the lesions of the nodular syphilid. It begins, as a rule, with a nodule the size of a pea, and in the course of weeks or months, becomes the size of a walnut, or even larger. It is circumscribed, flat, or slightly raised, painless, and with no surrounding areola. Early in the development the overlying epidermis is normal. When ulceration is threatened, the overlying skin becomes pinkish or reddish. . . .

This description apparently fitted the lesion in this case.

Although little evidence pointed toward the lesion having a tuberculous etiology, intradermal tests, with graduated doses of tuberculin were made, and a reaction was obtained with a 1:50,000 dilution.

When the lesion was incised and drained, cultures of the purulent material were made on the medium recommended by Jensen, and a good growth of acid-fast bacilli was obtained. Histologic examination substantiated the diagnosis.

A review of the literature leads one to believe that the possibility of a primary infection of the skin is small. Michelson,[4] in citing Wichmann, stated that investigation of about 2,000 cases of tuberculosis of the skin showed that only 40 could be classified as such. They were primarily in children.

Maloney [5] referred to the work of Rist and Rolland, who found that intradermal injections of tubercle bacilli in guinea-pigs which had previously been inoculated with similar organisms in many cases produced lesions of tuberculosis in the skin. However, a comparison between the lesions in guinea-pigs which had not been previously inoculated and those which had disclosed an interesting fracture. In animals which had not been inoculated previously the primary lesion developed slowly and followed the chronic course of a tuberculous ulcer whereas in the reinoculated animals the sore developed rapidly, lasted a short time and left no scar. In the lesions in reinoculated animals few bacilli could be found, while in those of animals inoculated for the first time many bacilli were present. The lesion exhibited by the patient whose case is reported here did not closely resemble either type.

On the other hand, there was no clinical evidence of tuberculous infection elsewhere. It is unlikely that in the absence of an active infection elsewhere there would be a bacillemia with the lodging and multiplication of organisms in the injured area.

There are certain questions of academic interest which might be asked but would be difficult to answer. Did the lesion in this case result from a combined syphilitic and tuberculous infection? What part did the recent injury play in precipitating the lesion? Did the lesion represent a primary or a secondary tuberculous infection? These questions and others cannot be answered with any degree of certainty.

SUMMARY

The purpose in reporting this case was twofold: I wish to point out (1) the ease with which in the presence of a 4 plus Kahn reaction a lesion may be diagnosed as syphilitic when it has a different etiology and (2) the ease with which tuberculous lesions treated surgically may be diagnosed when the medium suitable for the growth of the tubercle bacillus is employed.

4. Michelson, Henry E.: The Primary Complex of Tuberculosis of the Skin: Review of the Literature, Arch. Dermat. & Syph. **32**:589-601 (Oct.) 1935.

5. Maloney, Edward R.: Acne Agminata, Arch. Dermat. & Syph. **15**:285-297 (March) 1927.

THE BURROW OF ACARUS SCABIEI

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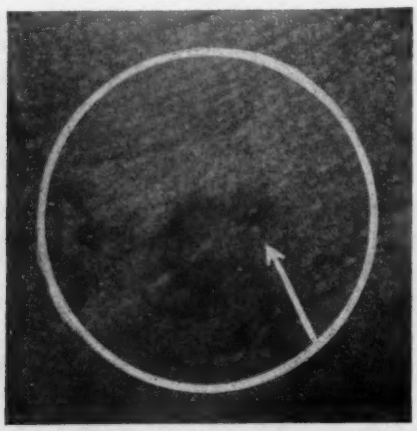

Fig. 1.—Burrow of Acarus scabiei. The arrow points to the site of the acarus.

This, then, is the rainbow
And this, the pot of gold
At the end thereof,
Whose ultimate discovery—
Coupled with a full understanding
Of its significance—
Resulted in the solution
Of one of the most interesting
And mysterious problems
In all the history of medicine.

Written for the Two Hundred and Fiftieth Anniversary of Bonomo's discovery of the parasitic nature of scabies.

Read before the Carroll S. Wright Dermatological Society, Temple University School of Medicine, Philadelphia, Nov. 18, 1936.

Figures 1 and 2 are reproduced from the author's article on Johann Ernst Wichmann: The One Hundred and Fiftieth Anniversary of His Contribution to Scabies, M. Life **43**:169-220 (May) 1936.

For the sons of Aesculapius,
Since time immemorial,
Had been chasing after
This elusive rainbow,
Without success.

Until, at last,
In 1687,
An Italian physician,
Giovan Cosimo Bonomo,
Caught up with it,
Followed it
To its farthermost limits,
And captured the pot of gold
At the very end of it—
Only, alas, to lose it!

Thereafter,
For a century and a half,
Numerous others—
Professors, assistants, students,
Treasure-hunting rainbow-chasing all—
Tried
But could not duplicate
Bonomo's feat.

Finally,
In 1834,
A rustic, Corsican medical student,
One Simon François Renucci,
His professor to please,
Repeated Bonomo's trick—
With the greatest of ease.

And,
Furthermore,
To the added surprise
Of all critical eyes,
(For they were mite-ly wise),
Held firmly on
To his precious prize!

Moreover,
He time and again
Revealed its hide-out,
Convinced all skeptics,
Dispelled all doubt—
And put all unbelievers
Forever to rout.

. . . .

The Key to Scabies,
Found by Bonomo,
By him misplaced,
Through him lost,
And,
Ultimately rediscovered
By Renucci,
Was of threefold service
To mankind.

It solved
The Problem of The Itch.
And, by so doing,
Firmly locked the door
On the Humoral Pathology
Of the Past,
And
Widely opened another,
To the Animate Pathology
Of Today.

. . . .

Thus,
To everlasting glory
And to fame,
Both doctor and student
Justly lay claim.

Immortal be their name!

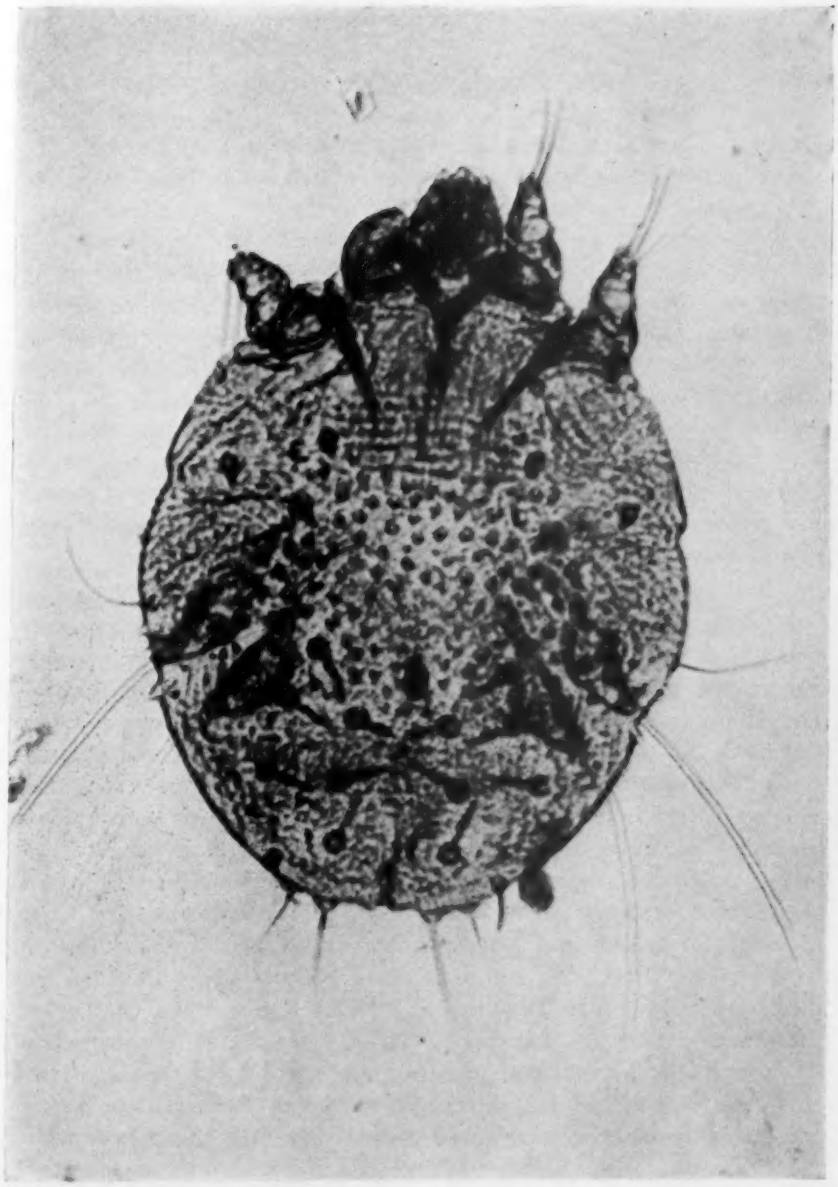

Fig. 2.—Acarus scabiei removed from under the whitish pinpoint speck at the end of the burrow pictured in figure 1.

MANGANESE THERAPY FOR PSORIASIS

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In a disease of which the etiology is not known and for which a specific therapy has not been found any type of treatment that offers possibilities may be justly grasped with a ray of hope. Such a malady is psoriasis, from the sufferers of which venders of nationally advertised nostrums have yearly garnered untold sums. With these facts in mind the following study was undertaken.

In reviewing the literature on manganese as a therapeutic agent one finds numerous reports from the European clinics on its use in the treatment of psoriasis. We were able to obtain an unlimited supply of a colloidal preparation of the substance, and the following investigation evolved.

ETIOLOGY

Before attempting to develop the rationale of a treatment for any disease it is fitting to ascertain what is known of its etiology. To that end we have reviewed the voluminous literature of the past two decades. The best summary of the etiology of psoriasis which we have found is that given by Schamberg [1] in 1924. This author considered the following suggestions on the etiology of psoriasis as the most pertinent ones up to that time: the association with rheumatism or with a gouty tendency; defective renal elimination; defective assimilation of food; pancreatic disease; digestive and nutritional disorders; disturbances of the nervous system; fright, shock and neurotic conditions; tuberculosis; endocrine disturbances; parasitism, and disorders of metabolism. In discussing these possibilities Schamberg considered parasitism and the metabolic factor as the most likely causes, discarding all the rest for lack of evidence. After reviewing the literature we are inclined to accept Schamberg's opinion. In covering the reports of the last twenty years we have found 121 references related to the foregoing list of possible etiologic factors. Those most frequently mentioned were: the association with rheumatism and arthritis, endocrine dysfunction, abnormal metabolism and parasitism, including fungous infections.

From the Department of Dermatology and Syphilis of the Massachusetts General Hospital, Dr. Lawrence Oliver, Chief.

1. Schamberg, Jay F.: The Known and the Unknown About Psoriasis, J. A. M. A. **83**:1211 (Oct. 18) 1924.

Seventy-six other papers discussed other possible causes of the disease, the most often mentioned among these being heredofamilial factors; relation to other cutaneous diseases, ingestion of drugs, allergy, trauma and syphilis.

Among the more interesting of the recent publications are those of Grütz [2] on fat metabolism. In studying the pathogenesis of psoriasis he observed that the dilated papillae were completely filled with finely granular lipoid substances, particularly in the vicinity of the capillaries. He also noted that the scales were rich in lipoids and cholesterol. High grade hyperlipoidemia and hypercholesteremia were also present in a large number of patients, the total serum fats showing an elevation of 40 per cent above the normal. Therefore Grütz held psoriasis to be a particular type of "lipoidosis," the condition arising on the basis of disturbance in the fat metabolism. On the grounds of this theory he prescribed for adults a daily intake of fat amounting to 20 Gm., and for children he restricted the intake of fat to 10 Gm. per day, securing most encouraging results over a period of time.

Gaul and Staud,[3] by biospectrometric determinations observed a retention of nickel in all of a series of 46 patients with psoriasis as checked against 300 controls. The significance of this observation is not clear at present, but it may prove to be a lead to some important advance. Joffe [4] maintained that the vital factor in psoriasis is a disturbance of sulfate metabolism, the oxidation of the sulfur-containing protein molecules being reduced.

TREATMENT

In covering the reports on the therapy of psoriasis the magnitude of the number of remedies advocated shows that none of them is outstandingly successful. In all we have encountered 223 references to various methods of treatment published in the past two decades. In order of frequency the most numerous references to the respective methods were as follows: ultraviolet or heliotherapy, either alone or in combination with various local applications; roentgen irradiation applied directly to the lesions or to such ductless glands as the thymus, the

2. (*a*) Grütz, O., and Bürger, M.: Die Psoriasis als Stoffwechsel-problem, Klin. Wchnschr. **12**:373 (March 11) 1933. (*b*) Grütz, O.: Ueber eine neue Pathogenese und Therapie der Psoriasis, Deutsche med. Wchnschr. **60**:1039 (July 13) 1934; (*c*) Das Psoriasis-Problem im Lichte ätiologischer Forschungen und klinisch-diätetischer Erfahrungen, Arch. f. Dermat. u. Syph. **170**:143, 1934.

3. Gaul, L. Edward, and Staud, A. H.: Clinical Spectroscopy: The Quantitative Retention of Nickel in Psoriasis; Observations on Forty-Six Cases, Arch. Dermat. & Syph. **30**:697 (Nov.) 1934.

4. Joffe, M.: Sulphate Metabolism in Psoriasis, Urol. & Cutan. Rev. **38**: 261 (April) 1934.

pituitary, the thyroid or the spleen; other endocrine or hormonal therapy; intravenous administration of gold salts; the use of various ointments containing sulfur, chrysarobin, ammoniated mercury or tar; injections of scale extracts; diets; parenteral administration of foreign proteins and autohemotherapy; administration of arsenic in various forms; intravenous injections of solutions of salicylic acid; intravenous or intramuscular injections of colloidal manganese; intravenous administration of dyes; intramuscular injections of bismuth preparations, and administration of vaccines.

Of possible importance is a recent report by Thurmon [5] on the intravenous use of an organic sulfur compound. This seems to be a promising mode of treatment, which may prove to be of great value.

MANGANESE THERAPY

As stated, our interest was primarily focused on the use of manganese preparations. The first to employ this mode of treatment was James Moore,[6] of England, in 1922. This author treated 35 patients with psoriasis with injections of colloidal manganese and obtained excellent results. He made the statement that from 6 to 16 injections would clear up psoriasis without local measures. Moore felt that the disease was due to a special staphylococcus and drew an analogy to the beneficial effect of colloidal manganese on staphylococcic pyoderma.

No further reports on the use of this agent appeared until 1931; then several came out within a few years. Szegö and von Luka [7] utilized a manganese preparation in treatment of 27 patients; in 16 of these the condition cleared, in 8 it improved and in 3 it was refractory. Nine months later in the 16 patients in whom results had been perfect there had been no recurrences; 2 of the 8 who had improved had had relapses, but in these a second course stopped the progress of the disease. These authors were highly enthusiastic over their results and the innocuity of the treatment. They even suggested that manganese approached being "specific" in the management of psoriasis. Bohnstedt [8] used this mode of therapy on 38 patients. In 8 the condition cleared; in 16 it improved; in 6 it was refractory; 7 did not complete the treatment and 1 exhibited a shocklike reaction. Most of his patients used mild local applications in conjunction with the manganese therapy. By measuring the anaerobic glycolysis, Bohnstedt observed a distinct elevation of lactic acid pro-

5. Thurmon, F. M.: The Treatment of Psoriasis with an Organic Sulphur Compound, New England J. Med. **213**:353 (Aug. 22) 1935.

6. Moore, James: Treatment of Psoriasis, Brit. M. J. **2**:41 (July 8) 1922.

7. Szegö, Paul, and von Luka, Stefan: Ueber die Manganbehandlung der Psoriasis, München. med. Wchnschr. **78**:2122 (Dec.) 1931.

8. Bohnstedt, Rudolf M.: Erfahrungen mit Psorimangan bei der Psoriasisbehandlung, München. med. Wchnschr. **79**:1150 (July) 1932.

duction in the healthy skin of these patients. His deduction was, therefore, that colloidal manganese exercised an activating effect on the oxidation processes going on in the epidermal cells. This work confirmed previous investigations by others. Barr [9] treated 7 patients, of whom 5 showed complete remissions and 2 were improved. Schmidt [10] and Richter [11] also obtained good results, but it was not possible to clear up the condition completely in their patients unless local measures were employed in conjunction with the manganese therapy. Richter's report was a modification of a publication which had appeared a few years before, in which he stated that of 26 patients treated, only 6 failed to show complete remissions and in which he expressed the belief that this was due to insufficient dosage. Less favorable reports have been published by Gushue-Taylor [12] and Geyer and Wesener,[13] who treated small numbers of patients. These investigators obtained no better results than with other modes of therapy. No appreciably prolonged periods of freedom occurred, and early relapses were the rule.

The authors mentioned used various colloidal preparations of manganese and administered from 6 to 36 injections of from 1 to 2 cc. at weekly intervals. Both the intravenous and the intramuscular method were employed, the former frequently causing an elevation in body temperature and the latter sometimes being followed by moderate pain and tenderness at the site of injection.

MODE OF ACTION

In addition to the theories on the action of manganese as expressed by Moore [6] and Bohnstedt,[8] a number of other biologic actions have been ascribed to this element. These have been covered in some detail in a previous report by us on the use of manganese in other cutaneous diseases.[14] They may be summarized in brief as follows: excretion via the intestines; augmentation of the power of the body to form antibodies; increased capacity of the organism to neutralize certain endotoxins; a relation to the development and proper functioning of the testes and mammary tissue; a rôle similar to that of copper in hemo-

9. Barr, Joseph: Intravenous Manganese in the Treatment of Psoriasis, J. M. Soc. New Jersey **32**:376 (June) 1935.

10. Schmidt, P. W.: Ueber die Behandlung der Psoriasis mit Psorimangan, München. med. Wchnschr. **78**:1090 (June) 1931.

11. Richter, Wilhelm: Erfahrungen über neuere Methoden in der Psoriasisbehandlung, Dermat. Ztschr. **65**:375 (Feb.) 1933.

12. Gushue-Taylor, G.: Psoriasis, Brit. M. J. **1**:558 (March 31) 1923.

13. Geyer, H., and Wesener, G.: Ueber die Behandlung der Psoriasis mit Psorimangan, Dermat. Wchnschr. **99**:1105 (Aug. 25) 1934.

14. Oliver, E. Lawrence, and Crawford, G. Marshall: Manganese Therapy of Furunculosis and Pustular Acne, M. Rec. **143**:154 (Feb. 19) 1936.

globin building, and growth-promoting properties. In a recent study on retention of manganese, Everson and Daniels [15] found evidence indicating that this element is essential to the physiologic development of children.

To our knowledge there have been no reports of any detrimental effects from the clinical use of manganese preparations. Canavan, Cobb and Drinker [16] in a paper on manganese poisoning stated: "With almost unvarying regularity the disease has been due to inhalation of manganese dioxide in large amounts." Manganese poisoning produces a parkinsonian type of syndrome but causes no life-shortening degenerations. At least three months of exposure to the dusts of manganese ore is required before these symptoms appear. The element does not accumulate in the body, and removing the patient from the source or cutting down the ore-containing dust stops the progression of symptoms, but in cases of well developed poisoning improvement is slow and complete recovery does not take place.

DATA ON TREATMENT OF ONE HUNDRED AND TWENTY-FIVE PSORIATIC PATIENTS WITH COLLOIDAL MANGANESE

As one of us (G. M. C.) in collaboration with Lane [17] had completed a statistical study of 231 psoriatic patients just before this investigation was begun, there was a large group of patients available. By selecting alternate patients for treatment with manganese, including new patients who came to the clinic, a group was obtained for the study of manganese therapy, the alternate patients being kept as controls. One hundred and forty-three patients were given treatment with colloidal manganese. A series of 20 intramuscular injections was planned; the injections were to be given at weekly intervals, and the series consisted of 10 injections of 1 cc. followed by 10 injections of 2 cc. Of these patients, 18 dropped out before receiving a minimum of 10 injections, leaving 125 persons as the workable group. A few patients showed fresh lesions during the course of therapy. These recurrences were, however, all of relatively short duration, and the lesions were small and showed few scales. In several cases in which the patient showed a rapid response in the early part of the study the injections were stopped after from 10 to 15 had been given. In about one half of these cases relapse occurred within from one to two months and a

15. Everson, G. J., and Daniels, A. L.: A Study of Manganese Retentions in Children, J. Nutrition **8**:497 (Nov.) 1934.

16. Canavan, M. M.; Cobb, S., and Drinker, C. K.: Chronic Manganese Poisoning, Arch. Neurol. & Psychiat. **32**:501 (Sept.) 1934.

17. Lane, C. Guy, and Crawford, G. Marshall: Psoriasis: A Statistical Study of Two Hundred and Thirty-One Cases, Dermat. & Syph., this issue, p. 1051.

second series of 10 injections was given. After this experience all the patients were given 20 injections, and a few received 25 treatments. A total of 2,418 injections was given to these 125 patients, an average of 19.3 treatments each.

Although, as stated, manganese is excreted mainly by way of the intestines, a check was kept on the renal status all through this study. The urine of each patient was examined at the beginning, middle and end of the course of treatments. In the urine of 5 patients a slight trace of albumin appeared after the first 10 injections; this proved to be transitory and was apparently of no significance, as albumin did not reappear when the manganese therapy was continued. One patient with chronic nephritis was observed closely and no evidence of increase in renal damage was noted during or within six months after treatment. There were 2 diabetic patients in the group. These were under observation in the clinic for patients with diabetes, and no effect was noted

TABLE 1.—*Statistical Data*

	Treated Group	Control Group
Number of patients	125	128
Sex: Male	62	57
Female	63	71
Average age	32 years	42.5 years
Average duration of the disease	10.5 years	15 years
Average age at onset	21.5 years	26.5 years
Previous remissions		
a. Number of patients	31	34
b. Total remissions	63	70
c. Average length	3 months	3.3 months

on this condition. Two others showed glycosuria; in 1 it appeared in the middle and in the other at the end of the course of treatment. No sugar was found in the urine of either of these patients on subsequent examinations, and reports from the clinic for patients with diabetes stated that they showed no evidence of diabetes.

From five to six months was required in each case for completion of the treatment, and it was possible to follow 105 of the patients for another period of six months. There were 128 controls who were followed through the first six months, and 101 of these were followed for the second six months. The data on the 125 patients treated with manganese and on the 128 controls are shown in table 1.

As most of the patients in these groups had received varying types of therapy for several years without uniformly satisfactory results, no instructions to stop the usual local measures were given. All new patients, however, in both the manganese-treated group and the control group, were given only petrolatum. Many of the others stopped all local treatment when they felt they were improving as a result of the new therapy. The condition of the treated group and that of the control

group at the end of the period of treatment are given in table 2. The condition of patients followed for six months after the end of the period of active therapy and data on the controls are given in table 3.

It was possible to observe 78 patients belonging to the treated group for an additional third period of six months, or twelve months

TABLE 2.—*Results in Six Months of Active Therapy*

Results	Treated Group		Control Group	
	Number of Patients	Percentage	Number of Patients	Percentage
100% clear	11	8.8	2	1.6
75% clear	39	31.2	8	6.3
50% clear	33	26.4	12	9.4
25% clear	24	19.2	24	18.8
No change	18	14.4	61	47.7
Worse	0	0	21	16.2
Total	125	100	128	100

TABLE 3.—*Results in Six Months of Subsequent Observation*

Results	Treated Group		Control Group	
	Number of Patients	Percentage	Number of Patients	Percentage
100% clear	12	11.4	3	3.0
75% clear	36	34.3	7	6.9
50% clear	27	25.7	10	9.9
25% clear	12	11.4	19	18.8
No change	16	15.3	49	48.5
Worse	2	1.9	13	12.9
Total	105	100	101	100

TABLE 4.— *Final Period of Observation of the Treated Group*

Results	Third Period of Six Months		Fourth Period of Six Months	
	Number of Patients	Percentage	Number of Patients	Percentage
100% clear	13	16.7	3	20.0
75% clear	20	25.6	4	26.6
50% clear	18	23.1	3	20.0
25% clear	14	17.9	1	6.7
No change	12	15.4	3	20.0
Worse	1	1.3	1	6.7
Total	78	100	15	100

after the end of the treatment with manganese—a total of eighteen months from the beginning of treatment. Of these 78, 15 continued to report for a fourth period of six months, making the period of observation one and one-half years after treatment and two years from the beginning of the study. The status of these two groups is shown in table 4.

We did not attempt to follow the control group beyond one year from the start. This was considered an ample period of observation, and comparison with statistical data on a series of 231 patients previously studied [17] was deemed satisfactory. In that group it was shown that complete remissions after any type of treatment had occurred only one time in every seven and nine-tenths psoriasis years.

COMMENT

A study of the tables shows that in the group treated with manganese there was a satisfactory improvement as compared to the condition in the controls. By combining results amounting to 50 per cent or more improvement, the percentage of what may be considered good results was consistently from 65 to 70 per cent. The number of cases in which the condition cleared completely steadily increased as time went on, the incidence increasing from 8.8 per cent at the end of the period of active therapy to 20 per cent after a total of eighteen months of subsequent observation. This is a gratifying result in as stubborn a disease as psoriasis. It is not at all comparable with some of the previously reported studies on treatment with manganese, however, and is no better than some of the results reported with other methods of therapy. Furthermore, we found that approximately three fourths of the patients showing the best results were those who had continued their local measures. On the other hand, it is true that in many patients these same local agents either had previously been ineffective or had merely served to hold the eruption in check. This seems to indicate that while therapy with colloidal manganese alone may be of definite value the treatment is still more efficacious when it is combined with suitable local measures. Although at the time of the final check up, two years after the start of the study, only 15 patients of the group returned to the clinic, it was encouraging to see that 20 per cent of these were completely free from the disease. If such results obtain for the entire group, it would indicate that 1 of every 5 patients with psoriasis could be offered remissions of at least two years by means of injections of colloidal manganese combined with adequate local therapy. That would be a definite step in advance.

In regard to the response of special areas to this treatment several interesting facts were noted. There were 54 patients with involvement of the finger-nails and 36 with psoriasis of the toe-nails. No patients were found to have lesions of the toe-nails unaccompanied by involvement of the finger-nails. Injections of manganese cleared up those lesions in approximately 20 per cent of the patients; 55 per cent were definitely benefited, and 25 per cent showed little or no response. The palms were involved in 8 patients, 4 of whom also showed lesions on

the soles. Two responded completely to the injections; 4 responded incompletely, and 2, in whom only the palms were affected, showed no response at all. The backs of the hands were involved in 10 patients. In 3 of these the condition cleared; in 3 there was much improvement, and in 4 the condition was refractory. The face was involved in 57 patients. Manganese therapy cleared up the lesions in approximately 60 per cent of these patients, gave definite results in 22 per cent and had little or no effect on the other 18 per cent. A total of 114 patients had lesions of the scalp, and these showed much less response, the lesions clearing in only 17 per cent, improving considerably in 41 per cent and remaining refractory in 42 per cent.

The effect of this type of therapy on pruritus was in many cases most dramatic. Altogether there were 41 patients in the treated group who were troubled with this symptom, and all were favorably affected, 61.5 per cent being entirely relieved and 38.5 per cent reporting a marked decrease of the pruritus. In many instances only 2 or 3 treatments were required to stop the itching completely.

Pain after injection was complained of by 72, or 57.6 per cent, of the patients treated with manganese. In the great majority of these it was present only after the first few treatments. In no case was it severe enough to incapacitate the patient, and only 3 patients experienced pain and stiffness throughout the series of injections.

The total amount of colloidal manganese administered to each patient was 30 cc. over a period of approximately six months, or 10 injections of 1 cc. plus 10 injections of 2 cc. The product employed [18] has been described in detail elsewhere.[14] It contains 0.0025 Gm. (2.5 mg.) of metallic manganese per cubic centimeter. Thus for each patient who received a total dose of 30 cc. the intake of manganese was 75 mg. in the six months of treatment, and in a patient weighing 110 pounds (50 Kg.), which would be a low average weight, the possible cumulative quantity over the entire period of six months would be only 1.5 mg. per kilogram. Canavan, Cobb and Drinker [16] stated, however, that manganese does not accumulate in the body. A single dose of 2 cc. of colloidal manganese, containing 5 mg. of manganese, would give a person weighing 50 Kg. an individual dose of 0.1 mg. of the element per kilogram. That this is a small dose is evidenced by two reports on the toxicity of manganese. Cervinka,[19] using manganese chloride, found the fatal dose to be 56 mg. per kilogram for dogs and 18 mg. per kilogram for rabbits. In rabbits a dose of 2.5 mg. per

18. The product employed was collosol manganese. The entire amount used in this study was furnished by the Crookes Laboratories, Inc., 305 East Forty-Fifth Street, New York.

19. Cervinka, F.: Pharmacologie et toxicologie du manganèse, Compt. rend. Soc. de biol. **102**:262 (Oct. 18) 1929.

kilogram seemed harmless, but when the dose was raised to 3 mg. irritation of the kidneys and of the intestinal mucosa resulted; the same was observed in dogs. Sato [20] studied manganese oxide and reported the lethal dose for rabbits to be 7 mg. per kilogram in the bivalent form and 25 mg. per kilogram in the trivalent form. In view of the figures given by these two authors, the dose of 0.1 mg. per kilogram used in the present study was surely incapable of producing damage to the human organism.

SUMMARY AND CONCLUSIONS

We have attempted to review the etiology and treatment of psoriasis and have undertaken a study of its management with colloidal manganese. The conclusions of Schamberg that parasitism and metabolic aberrations are the most tenable factors in the causation of psoriasis seem to be well chosen. Recent work by Grütz, suggesting that the disease may be a particular type of lipoidosis, is worthy of note. In the maze of agents advocated for the treatment of psoriasis there is no one of outstanding merit. Results of treatment with an organic sulfur compound used intravenously by Thurmon are of considerable interest. Manganese therapy is among the methods reported on favorably, especially in the European clinics, and its efficacy was studied by us. The biologic actions and the toxicity of the drug are discussed. Colloidal manganese was given to 143 patients with psoriasis, each receiving a series of 20 weekly intramuscular injections, and the follow up extended over a period of two years. The percentage of these patients in whom the condition cleared was as high as 20 when suitable local measures were combined with the injections. Notably good results were obtained on the face, and lesions on the scalp appeared to be the most refractory. Pruritus was relieved in a large percentage of patients. Manganese therapy in the dosage used here seems to be entirely innocuous. It would seem, therefore, that injections of manganese may be an additional therapeutic measure of value in the treatment of this obstinate disease.

20. Sato, Juniti: Nouvelles recherches biologiques sur le manganèse, Arch. internat. de pharmacodyn. et de thérap. **36**:49, 1929.

CORRECTIONS

In the article by Abramowitz and Noun entitled "Fixed Drug Eruptions," which appeared in the May issue (**35**:875, 1937), the paragraph beginning "Illustration of a fixed arsphenamine eruption," at the top of page 881, should have been inserted opposite "Footnotes 9, 10 and 11" at the bottom of page 880, in the section headed "Arsphenamines."

The last line of the review of "Histological Technique," in the May issue (**35**:1006, 1937), was lost in publication. It should read, "that are used today in the histologic study of tissues." The author's name should read Krajian, not Kragian.

NECROBIOSIS LIPOIDICA DIABETICORUM

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AND
CARL W. LAYMON, M.D.
MINNEAPOLIS

Since our report [1] on necrobiosis lipoidica diabeticorum was made in 1934 we have carefully scrutinized the literature for articles on the subject and have observed four additional patients who had diabetes with this complicating cutaneous manifestation. The title which Urbach [2] conferred on the condition seems to have been generally accepted. It is still our opinion that, pathogenetically, necrobiosis lipoidica diabeticorum is closely related to diabetic gangrene on account of the underlying vascular disturbance, that it is allied somewhat to xanthoma on account of the deposit of lipoids and that it is frequently difficult to draw sharp lines of demarcation microscopically between the two conditions. Further observation has also convinced us that trauma plays an important part in the pathogenesis. A review of the literature since the publication of our article reveals the report of Klaber,[3] who presented before the Royal Society of Medicine a 36 year old woman with the condition, the studies of two cases by Zeisler and Caro [4] and observations by Urbach [5] concerning his patient with necrobiosis lipoidica diabeticorum accompanied by changes in the eyegrounds.

In Klaber's [3] case observation of the cutaneous lesions led to a correct diagnosis of diabetes. Five years previously the patient had noticed that a nodule had appeared on her right instep after the site was traumatized. Several similar lesions later appeared on the legs, each

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From the Division of Dermatology, University of Minnesota Hospital, Dr. Henry Michelson, Director.

1. Michelson, H. E., and Laymon, C. W.: Necrobiosis Lipoidica Diabeticorum (Urbach): Dermatitis Atrophicans Lipoides Diabetica (Oppenheim), J.A.M.A. **103**:163 (July 21) 1934.

2. Urbach, E.: (*a*) Beiträge zu einer physiologischen und pathologischen Chemie der Haut: Eine neue diabetische Stoffwechseldermatose: Nekrobiosis lipoidica diabeticorum, Arch. f. Dermat. u. Syph. **166**:273, 1932; (*b*) Necrobiosis lipoidica diabeticorum, Dermat. Wchnschr. **99**:1596 (Dec. 8) 1934.

3. Klaber, Robert: Necrobiosis Lipoidica Diabeticorum: Report of Case, Brit. J. Dermat. **46**:226 (May) 1934.

4. Zeisler, E. P., and Caro, M. R.: Necrobiosis Lipoidica Diabeticorum, Arch. Dermat. & Syph. **29**:167 (Jan.) 1934.

5. Urbach, E.: Necrobiosis lipoidica diabeticorum mit Augenhintergrundveränderungen, Dermat. Wchnschr. **100**:152 (Feb. 2) 1935.

being preceded by irritation. The papules gradually increased in size; they became violaceous, and in some a yellow tint developed in the central portions. Ulceration was present in others. Although the patient had no symptoms suggesting diabetes, the sugar content of the blood while the patient was fasting was 300 mg. per hundred cubic centimeters, and the curve for dextrose tolerance was typical for diabetes. In the histologic sections fatty infiltration, foam cells and changes in the blood vessels were the most prominent features.

Zeisler and Caro [4] agreed with Urbach's conception that the underlying process in necrobiosis lipoidica diabeticorum was a fatty imbibition in a previously damaged connective tissue brought about by vascular changes. They expressed the opinion that the disease was a local manifestation of a generalized lipoidosis. In their second case, that of a Jewish woman aged 72, droplets of lipoid were observed within histiocytic cells, just as in Klaber's case.

In May 1934 Urbach [2b] again presented his first patient before the Austrian dermatological society. After two years of treatment with a low fat diet and local injections of insulin the cutaneous lesions had almost healed.

Urbach's [5] most recent case of this condition was demonstrated before the same society in October 1934. The patient was a woman aged 57 who presented lesions on both lower extremities. In addition, sclerotic thick-walled arteries, streaked hemorrhagic areas and glistening deposits (cholesterol?) were found in the ocular fundi. Biopsies of material from the cutaneous lesions showed extracellular deposits of lipoid, which in Urbach's opinion were not neutral fat.

After the presentation of this case Oppenheim called attention to the fact that he had shown an example of this odd cutaneous condition before the society in 1928, five years before Urbach's original report was made. After summarizing the clinical and histologic features of the disease in its various stages, he suggested that it be named dermatitis atrophicans et necroticans lipoides diabetica.

Kren continued the discussion by stating that the yellow color of the lesions could be lacking and that it represented only a certain phase of the process. Kren mentioned that he had observed a total of five cases of the disease, the first one having been observed seven years previously (1927). He discussed the variability of the clinical features and the occasional resemblance to erythema induratum or sarcoid of Darier and Roussy. He expressed the belief that the imbibition of lipoid in necrobiosis lipoidica diabeticorum was of secondary importance, since it occurred in other pathologic conditions characterized by necrosis of tissues.

Urbach concluded the discussion by stating that in no other dermatologic or pathologic condition was a similar imbibition of lipoid noted. He reiterated his views that in necrobiosis lipoidica diabeticorum there was first a marked disturbance of the cutaneous blood vessels (due to diabetes) plus an imbibition of lipoids (secondary to disturbed fat metabolism) in the damaged tissues.

REPORT OF CASES

CASE 1.—A. R., a man aged 60, of Norwegian descent, had known that he was suffering from diabetes for about a month before he was admitted to the University Hospitals in September 1934, but symptoms of increased hunger and thirst and of frequency of urination dated back approximately a year. In August

Fig. 1. (case 1).—Lesions which appeared after burns with an electric heating pad.

1934 there appeared on his right elbow a large boil which refused to heal with local therapy; hence the local physician was called. He tested the patient's urine for sugar and made a diagnosis of diabetes. At about that time the patient also noticed tingling and numbness of the lower extremities, for which he applied a hot water bottle and an electric heating pad, both of which burned his legs and feet in several places. Soon after he was admitted to the hospital. Except for the aforementioned condition the only other point of importance in the history was the fact that he had acquired syphilis when he was 45 years old, for which he had received neoarsphenamine and bismuth, treatment being continued for two years.

During the period of hospitalization the Wassermann and the Kline reaction of the blood were negative, and examination of the spinal fluid showed no evidence of syphilis. The routine examinations of the blood gave normal results,

and the urine was frequently found to contain sugar. The sugar content of blood obtained while the patient was fasting was 172.5 mg. per hundred cubic centimeters.

There were five cutaneous lesions on the lower extremities, which were located on the tibial crest of the right leg, the medial surface of the right foot and the dorsum and both the medial and the lateral malleolus of the left foot, respectively. These lesions were all shallow ulcers in the stage of healing, though one could see at a glance that they presented certain features not ordinarily seen in nonspecific traumatic ulcers. Their centers were of a distinct yellow hue, surrounded by a violaceous zone, which in turn was bounded by darkly pigmented skin. The overlying cutaneous covering of the lesions presented a definite waxy appearance, and minute blood vessels could be seen coursing over the plaques. All the efflorescences were similar except for size and shape. During the three months of hospitalization the lesions did not change appreciably, even though the underlying diabetes was controlled by proper diet and insulin.

CASE 2.—V. K., a woman of German descent aged 30, had been treated for diabetes for seven years. At the time of examination she was following a low carbohydrate diet consisting of 1,525 calories; this was supplemented by three injections of insulin daily in doses of 20, 10 and 20 units. In December 1933 she noticed a pea-sized lump over the lateral surface of the left foot, which gradually flattened out to form a plaque which slowly enlarged peripherally. A similar lesion appeared on the anterolateral aspect of the left leg in April 1934 and progressed in the same manner as the first. In 1926, after the birth of her only child, she had milk leg, the condition affecting the left lower extremity, which caused her to be bedridden for four months. Since that time her left leg had always tired easily and became swollen as a result of exertion.

Examination showed an oval plaque measuring 3 by 5 cm. on the dorsum of the right foot near the bases of the third and fourth toes. The lesion was firm to palpation and definitely raised above the level of the surrounding skin, though the usual yellow center and surrounding lilac zone were not present in great degree. There was no visible surface change, and no telangiectatic vessels were present. The second lesion, on the upper third of the anterior portion of the leg, was identical with the one on the foot except for size. The sugar content of the blood ranged between 270 and 290 mg. per hundred cubic centimeters.

CASE 3.—J. M., a German woman aged 23, knew that she had diabetes since 1930, though symptoms of increased hunger and thirst had been present two years before a definite diagnosis was made. The cutaneous lesions appeared in 1928 simultaneously with the symptoms of diabetes. There were two lesions on each leg below the knee, and she distinctly recalled that each appeared after a bruise. Both of the lesions on the left leg had ulcerated at various times at irregular intervals, while those on the right leg had remained asymptomatic plaques.

The patient was admitted to the University Hospitals in April 1935 for treatment of acute cellulitis of the buttocks, and the sugar content of the blood was found to be 322.5 mg. per hundred cubic centimeters during fasting. Her diet was restricted to 1,619 calories daily and consisted of 100 Gm. of carbohydrate, 65 Gm. of protein and 100 Gm. of fat; insulin was given three times daily in doses of 50, 20 and 30 units, before meals.

On the anterior surface of the left leg 8 cm. below the knee there was an irregular violaceous plaque 5 cm. in breadth which was superficially ulcerated in

several places. The ulcerations were covered with dark crusts from under which purulent material oozed. The scarred plaque was freely movable and was at no point fixed to the underlying tibia. Toward the center of the lesion numerous yellow foci were plainly visible. The second lesion on the left leg, situated 2.5 cm. below the one just described, was a lilac scar flecked with yellow dots and was free from ulceration. The two lesions on the anterior surface of the right leg were waxy plaques such as those regarded as characteristic for necrobiosis lipoidica diabeticorum.

Fig. 2 (case 3).—Ulcerated lesions which appeared two years before the diagnosis of diabetes mellitus was made.

Case 4 (Dr. S. E. Sweitzer).—A girl, aged 16, stated that in November 1932 (four years previously) she had begun to lose weight and had been referred to a physician for a physical examination. A diagnosis of diabetes mellitus was made after sugar was repeatedly found in the urine. Early in 1935 a red spot appeared on the anterior aspect of the right leg midway between the ankle and the knee. The lesion, though asymptomatic, gradually increased in size. In October 1935 a second lesion appeared about 3 inches (7.6 cm.) above the original one.

Both lesions, which were situated on the anterior tibial surface of the right leg, were the lilac-colored plaques considered characteristic of necrobiosis lipoidica

Fig. 3 (case 4).—Ulcerated and nonulcerated lesions. The lower lesion became ulcerated after slight trauma.

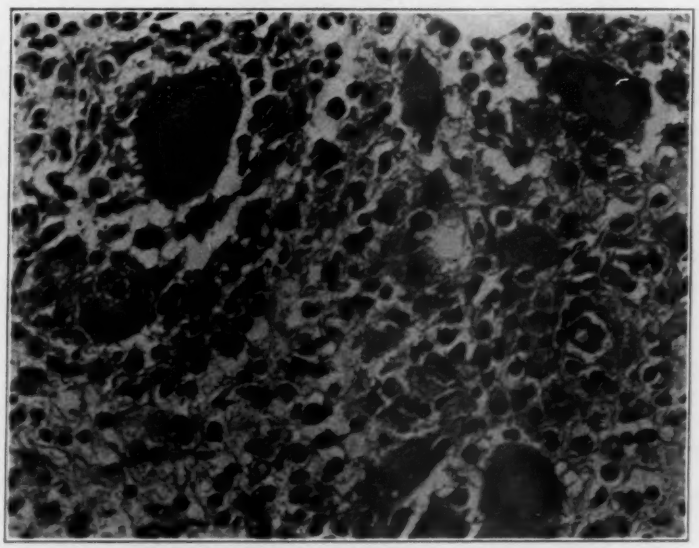

Fig. 4 (case 1).—High power magnification of a section showing giant cells in a lesion of necrobiosis lipoidica diabeticorum.

diabeticorum. There were no areas of ulceration. The rest of the cutaneous surface showed no abnormalities, and the patient appeared to be in good general health. (The patient returned to the clinic in April 1936, presenting an ulcer 4 cm. in diameter at the site of the first lesion, as shown in figure 3.)

HISTOLOGIC OBSERVATIONS

The microscopic observations in all our four cases agreed in general with those which we described in detail in our previous report; they consisted of necrobiotic areas in the cutis, lymphocytic infiltration and extracellular lipoid deposits. A notable variation from the usual features was the presence of a considerable number of giant cells in the sections in case 1.

COMMENT

Within the past two years we have studied in detail six cases of necrobiosis lipoidica diabeticorum. In reviewing the histories it was noted that a definite trauma preceded the development of the characteristic plaques in every instance. Our original belief that the process, though much milder, is pathogenetically similar to diabetic gangrene has been further strengthened by continued observation of our patients with necrobiosis and of other patients with gangrene.

Smith [6] recently reported a case of xanthoma diabeticorum in which the lesions became ulcerated. He stated that the process did not differ from necrobiosis lipoidica diabeticorum except for degree. In distinct contrast to the latter condition, however, the ulcers healed rapidly as a result of dietary regulations and administration of insulin.

Although we feel that necrobiosis lipoidica diabeticorum is more closely related to diabetic gangrene than xanthoma, Smith's case and the histologic observation of foam cells and intracellular lipoid deposits within histiocytes in the cases of Klaber [3] and of Zeisler and Caro [4] illustrate that the lines of microscopic differentiation between these conditions cannot be too sharply drawn. In case 3 of this series giant and histiocytic cells containing lipoid were prominent features. It seems that the well known torpidity of reaction of the tissues of diabetic patients has an important influence on both the clinical and histologic features of accompanying integumentary processes.

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6. Smith, J. Ferguson: Xanthoma Diabeticorum with Purpuric and Ulcerating Lesions, Brit. J. Dermat. **46**:223 (May) 1934.

Clinical Notes

THROMBOPHLEBITIS AND PITYRIASIS ROSEA

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The occurrence of a severe thrombophlebitis limited to one arm during the period of involution of the eruptive stage of pityriasis rosea seems well worth recording, especially since complications and sequelae of pityriasis rosea are practically unknown. Known causes of thrombophlebitis and conditions in which thrombophlebitis is sometimes seen as a complication were not present.

It is astounding how voluminous the literature has become regarding the etiology of a disease as comparatively insignificant as pityriasis rosea. Of the various hypotheses advanced as to the etiology, the theory that pityriasis rosea is a feebly infectious disease probably has the most adherents.

The occurrence of thrombophlebitis as a complication or sequela of pityriasis rosea certainly seems to favor an infectious etiology, the lesions in the walls of the veins being due to injury by an infectious agent or by toxins elaborated by an infectious agent. That thrombophlebitis may occur as a primary disease in an otherwise healthy person is an established clinical fact. This type of primary idiopathic thrombophlebitis could not, of course, be ruled out in the case recorded.

REPORT OF A CASE

A woman, aged 21, a worker in a lace-paper factory, was first seen on May 5, 1936, because of an eruption involving the trunk, the thighs and the upper extremities. Examination revealed a typical eruption of pityriasis rosea. The herald patch was present on the left forearm and had appeared two weeks before examination and one week before the eruption had become generalized. The Wassermann and Kahn tests were negative.

The patient was not seen again until May 19, 1936, two weeks after her initial visit. At this time she complained of discoloration, pain and swelling of the left arm and axilla which had begun about three days before as redness and tenderness of the veins over the dorsum of the left wrist. There was no history or sign of gross mechanical trauma to the wrist or of a local infection or suppurative process in the region of the veins of the wrist or elsewhere. There was no history of chills or fever.

Examination at this time revealed a diffuse swelling of the entire left upper extremity extending from the dorsum of the left hand to the shoulder. The skin over the hand and fingers was purplish red; the rest of the skin was of a lighter mottled reddish brown color. The skin of the affected extremity showed no increase in local heat as determined by touch. The superficial and deeper veins of the arm could be felt as thick tender palpable cords. The involvement of the veins appeared definitely segmental; it was marked by localized rubor and varied in length from a few millimeters to a few centimeters. There was considerable tenderness in the left axilla, although no definitely involved veins could be felt. The superficial veins over the left clavicle and anterior aspect of the upper portion of the chest on the left stood out prominently, but these veins were not involved in the inflammatory process. The eruption of pityriasis rosea had almost completely disappeared, although there were still faint scaling lesions. The temperature was 98 F. Except for these observations the physical examination at this time gave essentially negative results. The diagnosis was thrombophlebitis. The patient was told to rest and elevate the affected part and to apply heat.

She did not report again until about two months later, at which time there was still slight residual swelling of the dorsum of the hand and wrist and the superficial veins in the upper part of the chest and the clavicular region were still prominent. She had lost no time from work despite her illness.

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USE OF ETHYL ESTERS OF CHAULMOOGRA OIL IN TREATMENT OF LUPUS ERYTHEMATOSUS

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Recently Lomholt [1] reported excellent results in the treatment of lupus erythematosus with a proprietary preparation of ethyl esters of chaulmoogra oil. Encouraged by Lomholt's experience and because of the fact that the preparation which he used was not readily available in this country, I employed synthesized ethyl esters of chaulmoogra oil for a similar study. Since the product I used was not identical with that used by Lomholt, no direct comparison can be drawn with his results.

In spite of the fact that a competent chemist directing a competent organization [2] prepared the ethyl esters of chaulmoogra oil, my experience with the product was unfavorable. Two hundred grams of chaulmoogra oil was refluxed with 500 cc. of anhydrous ethyl alcohol in the presence of 6 cc. of sulfuric acid for forty-eight hours. The mixture was thrown into distilled water and the oily layer washed with water. It was then dried over sodium sulfate, filtered and distilled in vacuo. This process yielded 165 Gm. of a colorless, clear, almost odorless thin fluid oil the boiling point of which was from 185 to 210 C. at 4 mm. of mercury.

After appropriate toxicity tests had been made, the oil being given intravenously and intramuscularly to rabbits in an effort to determine the feasibility of its use in human beings, six patients with typical erythematous lupus were given treatment. Four patients received the ethyl esters intramuscularly; one patient received intravenous injections, and one patient received both intramuscular and intravenous treatment. The dose used was 3 cc. given twice weekly when the intramuscular method was used and 2 cc. given twice weekly when intravenous injections were employed. An average of twenty injections were given. In no patient was definite improvement noted, and one patient became decidedly worse while receiving treatment. Reactions were frequent and severe. Induration, pain and even formation of abscesses were observed after intramuscular injection. Occasionally dizziness and pains in the chest followed intramuscular injections. Intravenous injections in every case provoked an immediate flushing of the face, dizziness, coughing and constricting pains in the chest. In one instance the choking, coughing and pains in the chest became so severe that administration of morphine was required; the temperature reached 103 F., and rest in bed for several days was necessary. Delayed reactions consisted of headache, lassitude and a moderate rise in temperature.

From the Department of Dermatology and Syphilology, School of Medicine, University of Pennsylvania, John H. Stokes, M.D., Director.

1. Lomholt, Svend: Antileprolbehandlung bei Lupus erythematodes, Dermat. Wchnschr. **101**:817 (July 6) 1935.

2. The ethyl esters of chaulmoogra oil used in this study and the animals used in the toxicity tests were prepared and furnished by the Dermatological Research Laboratories, Philadelphia, George W. Raiziss, Ph.D., Director.

As I was unable to duplicate Lomholt's results with a carefully prepared chaulmoogra oil product, it is suggested that there may be some peculiarities about the preparation used by Lomholt that make its action different from that of the esters of chaulmoogra oil used in this study. It is also conceivable that the difference between results obtained by Lomholt and those obtained in this study may be entirely independent of the oil. The regional distribution, seasonal variation, dietary habits and nervous and emotional make-up of the patients in Lomholt's series may have played a part in the results obtained, as has been shown by the work of Sulzberger and Mayer [3] on the variations in sensitization as a result of different geographic distribution. That different lots of the same synthetic drug vary in toxicity and therapeutic value is well known. Whatever this difference is, my experience indicates the need for every precaution in the casual use of esters of chaulmoogra oil, regardless of the source of the product and of the care with which it is prepared.

3. Sulzberger, M. B., and Mayer, R. L.: Sensitizations: Regional, Seasonal, Dietary, and Other Influences Accounting for Variations and Fluctuations, Arch. Dermat. & Syph. **24**:537 (Oct.) 1931.

CONJUGAL LICHEN PLANUS

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Familial lichen planus is rare, and a review of the literature which has appeared since the publication of Spitzer's summary [1] in 1924 indicates that conjugal lichen planus is even more unusual. The following cases were encountered in our office practice.

REPORT OF CASES

CASE 1.—B. P., a housewife aged 45, was first seen on Aug. 19, 1935. She complained of an itching eruption of eight months' duration, particularly severe on the arms and body. Various local remedies had been used without effecting relief. There had been a gradual spread of the dermatosis. For several years before the onset of the present illness the patient had noticed slowly enlarging white areas in the skin of the abdomen and arms. She stated that her husband complained of pruritic elevated lesions on the legs, which were of two years' duration. Otherwise the history revealed nothing relevant to the present illness.

Examination showed typical lichen planus, consisting of grouped and agminated small purplish flat-topped papules scattered over the abdomen, back and extremities and in the axillae. There were annular groups of such lesions on the right shoulder and on the upper eyelids. On the buccal mucosa on the right side there were annular groups and a network of minute whitish lesions. The perianal and perivulvar areas showed marked maceration and irregular whitish patches within the macerated areas. There was scattered hyperpigmentation, apparently at the sites of healed lesions. There were areas of vitiligo on the forearms, abdomen and back.

Treatment with roentgen rays, injections of a bismuth preparation and, later, of mercury salicylarsenate coupled with topical remedies, resulted in gradual improvement. On Dec. 2, 1935, treatment was discontinued. Only a few small residual lesions remained, and no pruritus was present.

1. Spitzer, R.: Lichen Ruber Planus, Arch. f. Dermat. u. Syph. **146**:474, 1924.

CASE 2.—S. P., husband of B. P. (case 1), a salesman aged 53, was first seen on Jan. 10, 1936. He complained of gradually enlarging itching, scaling lesions on both legs, of from two to three years' duration. In the previous six months similar lesions had appeared on both arms and on the back of the neck. He also complained of hay fever, high blood pressure and rheumatic pains. All these disturbances were of several years' duration.

Examination revealed a marked obesity. On the anterior surface of the left shin and on the inner aspect of the right leg below the knee there was typical hypertrophic lichen planus consisting of grouped and single polycyclic, sharply marginated raised purplish lesions from 1 to 4 cm. in diameter, showing slight scaling. On the thighs, the dorsa of both feet, the arms and the hands, there were scattered angular flat-topped papules and occasional ringed forms. On the penis there was an annular lesion, about 1.5 cm. in diameter, with a raised whitish shiny edge about 1 mm. in diameter.

The lower lip showed whitish discoloration in ringed form. The buccal mucous membrane presented scattered and grouped white papules. The blood pressure was 180 systolic and 120 diastolic. There was pitting edema of the left ankle.

Since examination of the urine gave negative results, it was decided to give injections of mercury salicylarsenate in spite of the hypertension. However, after ten injections albumin appeared in the urine, and the injections were discontinued. A series of eight treatments with unfiltered roentgen rays was given also to the lesions on each shin, on the glans penis and on the lower lip, one-fourth skin unit being given at weekly intervals until a total of 2 skin units had been administered. Local treatment consisted of application of an antipruritic lotion. Improvement was satisfactory except for the hypertrophic lesions on the legs. These were finally painted with trichloro-acetic acid and were peeled down considerably in this fashion.

COMMENT

Spitzer[1] in 1924 was able to collect from the literature reports of forty-six instances of familial lichen planus. In only seven of these were a husband and wife affected. Since 1924 there have appeared ten additional reports of familial occurrence,[2] in two of which the patients were a husband and wife (Grangé; Weis, Spillmann and Rosenthal). The cases here reported therefore constitute the tenth recorded instance of conjugal lichen planus.

The rarity of the occurrence of lichen planus in husband and wife seems to us to indicate that the disease, if it is contagious, must be so only to a slight degree.

962 Park Avenue.

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2. Freund, E.: Familial Lichen Ruber Planus, Gior. ital. d. mal. ven. **65**:626, 1924. Smolka: Lichen ruber familiaris, zum Teil pemphigoides, Zentralbl. f. Haut- u. Geschlechtskr. **20**:26, 1926. Mierzecki: Lichen ruber familiaris, ibid. **21**:139, 1927. Vonkennel: Lichen ruber verrucosus, ibid. **30**:691, 1929. Feit, H.: Lichen Planus in Mother and Child. Arch. Dermat. & Syph. **20**:254 (Aug.) 1929. Parounagian, M. B.: Lichen Planus in Mother and Daughter, ibid. **22**: 1137 (Dec.) 1930. Scheer, M., in discussion on Parounagian, M. B.: Lichen Planus in Mother and Daughter, ibid. **22**:1137 (Dec.) 1930. Grangé, P.: Lichen plan conjugal, Rev. franç. de dermat. et de vénéréol. **8**:221, 1932. Weis, A.; Spillmann, L., and Rosenthal: Lichen plan conjugal et syphilis, Bull. Soc. franç. de dermat. et syph. **41**:803, 1934. Schildkraut, J. M.: Lichen Planus in a Mother and Daughter, Arch. Dermat. & Syph. **31**:428 (March) 1935.

Abstracts from Current Literature

EDITED BY DR. HERBERT RATTNER

CLINICAL EXPERIMENTS ON THE EFFECT OF AFRICAN SNAKE VENOMS ON HUMAN CANCER CASES WITH AND WITHOUT CONCOMITANT DEEP THERAPY. M. DES LIGNESIS and E. GRASSET, Am. J. Cancer **26**:512 (March) 1936.

In some cases of cancer relief from pain and a general tonic effect were observed after injections of snake venom. There was no evidence that injections of venom sensitized cancerous tissue to roentgen rays.

TUMORS OF THE ORAL MUCOUS MEMBRANES. CHARLES F. GESCHICKTER, Am. J. Cancer **26**:586 (March) 1936.

Practically all tumors of the oral epithelium, both benign and malignant, are epidermoid, being derived from the lining cells of the mucous membrane. Ulceration, either traumatic or syphilitic, and leukoplakia or papilloma are frequent precursors of cancer. In 10 per cent of the cases studied there was a history of syphilis. Basal cell carcinoma occurs rarely on the intra-oral mucosa, and when it occurs it appears chiefly on the cheek or palate. Geschickter, while admitting that trauma is often a predisposing factor in the development of cancer, expresses the belief that it is not a leading factor.

Embryologic considerations determine localization of malignant degeneration to a considerable extent. In the majority of cases surgical treatment, consisting usually of electrocautery, was used, and the percentage of cures has not diminished since the more routine block dissection of the regional lymph nodes was discontinued. When the series of cases in which surgical treatment was employed was compared with a similar series in which treatment with radium had been given elsewhere, the end-results in a five year period were almost the same. It appeared that the prognosis was determined by the extent of the disease rather than by the treatment employed.

CARCINOMA OF THE TONGUE IN A NEWBORN CHILD. L. W. FRANK, C. D. ENFIELD and A. J. MILLER, Am. J. Cancer **26**:775 (April) 1936.

This is the first recorded case of carcinoma of the tongue in a new-born infant. Histologic examination showed the lesion to be a squamous cell carcinoma. It healed after roentgentherapy and had remained healed for two years when the report was made.

FOERSTER, Milwaukee.

PRIMARY TUBERCULOSIS OF THE SKIN: REPORT OF TWO CASES. CAMILLE KERESZTURI and MORRIS SIEGEL, Am. J. Dis. Child. **51**:847 (April) 1936.

Exclusive of primary tuberculosis of the skin occurring after circumcision and of that produced by BCG, relatively few cases of undoubted primary tuberculosis of the skin have been reported. About fifty cases of this primary tuberculous complex have been noted in the literature exclusive of about fifty-eight cases of tuberculosis occurring after circumcision. The authors report two cases which were probably instances of primary tuberculosis of the skin. In one of the patients, the primary lesion was between the toes, and in the other patient it appeared below the knee. In both instances there was a subsequent inguinal adenitis, with the formation of a cold abscess. This degree of involvement of the regional lymph glands is of great aid in the differential diagnosis of the primary and reinfection types of tuberculosis of the skin. In primary tuberculosis the regional lymph glands are almost invariably affected, and usually they show a progressive process which leads to caseation and often to liquefaction. In cases of superinfection, although regional glands may occasionally become noticeably affected, the glandular involvement is usually less progressive and less marked.

QUANTITATIVE WASSERMANN TESTS IN DIAGNOSIS OF CONGENITAL SYPHILIS: CLINICAL IMPORTANCE OF FILDES LAW. HAROLD K. FABER and WILLIAM C. BLACK, Am. J. Dis. Child. **51**:1257 (June) 1936.

The authors believe that the transmission of syphilitic reagin from mother to fetus without the transmission of syphilis itself is a soundly established phenomenon and one of sufficiently fundamental importance to be designated as a law. They propose to call this law by the name of its discoverer, Fildes. In other words, additional proof is offered that syphilitic reagin in the blood of a new-born infant is diagnostic not of syphilis in the infant but of syphilis in the mother. It is shown that the quantitative Wassermann reaction, by means of which the amount of reagin is measured, is a valuable means of distinguishing between infants who have and those who do not have syphilitic infection. In the latter, the amount of reagin is usually, but not always, small, and in any case, progressively declines to zero. This decline occurs early and can be detected by the end of the first week or sooner.

ESSENTIAL XANTHOMATOSIS: TREATMENT WITH CHOLESTEROL-FREE DIET IN TWO CASES. WARREN M. SPERRY and BÉLA SCHICK, Am. J. Dis. Child. **51**:1372 (June) 1936.

The authors report a case of essential xanthomatosis occurring in a child. Besides the usual lesions, xanthelasma palpebrarum and a marked arcus corneae were present. Prolonged treatment with a cholesterol-free diet had no definite effect either on the hypercholesteremia or on the clinical picture. These results are in marked contrast with those of other investigators who have reported a marked decrease in the cholesterol content of the blood and an improvement in the clinical condition after the administration of similar cholesterol-free diets to patients with essential xanthomatosis. Evidently there are marked differences in the pathogenesis of the disease, since some patients react favorably to a cholesterol-free diet while others are not affected by the same treatment. The author believes that all patients with essential xanthomatosis should follow a cholesterol-free diet for a considerable period, since a certain number may be expected to react favorably.

DERMATORRHEXIS WITH DERMATOCHALASIS AND ARTHROCHALASIS (THE SO-CALLED EHLERS-DANLOS SYNDROME). F. RONCHESE, Am. J. Dis. Child. **51**:1403 (June) 1936.

The author in this report adds three cases of this syndrome to the twenty-seven cases already reported in the literature. The syndrome is characterized by (1) pronounced fragility of the skin and its blood vessels, with subsequent splitting and the formation of hematomas and pseudotumors at the slightest provocation (dermatorrhexis, fragilitas cutis); (2) a more or less pronounced hyperlaxity and hyperelasticity of the skin (dermatochalasis, laxitas cutis); (3) a more or less pronounced hyperlaxity of the joints (arthrochalasis, laxitas articularis). This syndrome is well defined and constitutes a clinical entity to be included in the group of congenital dystrophic anomalies.

HYPOTHYROIDISM AND CRETINISM IN CHILDHOOD: V. ENLARGEMENT OF THE HEART WITH HIRSUTIES (MYXEDEMA HEART). I. P. BRONSTEIN and J. J. BARATZ, Am. J. Dis. Child. **52**:128 (July) 1936.

The authors report in detail the case of a girl aged 6½ years who presented two outstanding symptoms, an enlarged heart and hirsuties. The child presented an extreme abundance of hair at birth, the distribution being generalized. When she was 6½ years old, fine blond hair was present in abundance over the face, particularly about the lower part of the cheeks and in the bearded area, and such hair was especially noticeable on the abdomen, chest and back. The eyelashes were luxuriant and markedly thickened on the upper lids. The hair on the head was somewhat coarse, dry, slightly curly and profuse and stood away from the

scalp. The heart decreased in size as a result of administration of thyroid; the medication, however, failed to affect the hirsuties. Twelve hypodermic injections of trihydroxyestrin totaling 3,000 rat units likewise had no effect on the hairs.

NELSON PAUL ANDERSON, Los Angeles.

THE THERAPY OF THE COOK COUNTY HOSPITAL: THE THERAPY OF ITCHING (PRURITUS). B. FANTUS and T. CORNBLEET, J. A. M. A. **106**:2144 (June 20) 1936.

Fantus and Cornbleet separate pruritus into local and general types. Treatment is divided into (1) local measures and (2) systemic measures. In cases of local pruritus local treatment is the more important. If possible the cause should be removed. The authors state that local pruritus is the result of increased tension within the derma; this may be due to the pressure of exudate or of any other disproportion between fluid pressure and epidermal surface rigidity or to the existence of cellular infiltration or of connective tissue overgrowth. Relief of itching may be accomplished by (1) lessening of the blood supply to the skin, (2) soothing of the sensory nerve endings, (3) softening of the epidermis, (4) depression of the sensory nerves, (5) destruction of cellular infiltrate by radiation therapy and (6) systemic measures. In patients with generalized pruritus, a thorough examination to determine the cause is in order. Among the common causes of generalized itching are cutaneous diseases such as scabies and pediculosis, excessive dryness of the skin, systemic diseases such as diabetes mellitus, diseases of the liver and kidneys, disturbances of the gastro-intestinal tract, diseases of the blood and allergy. An excessive secretion of sweat may produce itching. In many instances drugs should be administered to bring about a diminution of the blood supply to the skin. Attention should also be given to the central nervous system not only from the standpoint of direct relief of itching but also because every patient with pruritus needs some psychotherapy. An important principle which must always be remembered is that scratching must be prevented since scratching starts and maintains a vicious cycle.

STOMATITIS DUE TO SENSITIZATION TO DENTAL PLATES. H. RATTNER, J. A. M. A. **106**:2230 (June 27) 1936.

Rattner reports three instances of sensitization to materials substituted for vulcanite in dental plates. In two patients the symptoms were due to hypersensitiveness to hecolite, one of the newer base materials used as a substitute for vulcanite. The symptoms exhibited by the first patient included burning tongue, salty taste and increase in salivation, the symptoms being worse at the end of the day. Examination disclosed a diffuse inflammatory reaction of the mucosa of the entire oral cavity from the vermilion border of the lips to the pharynx. The second patient had a typical burning tongue, the symptoms being intermittent and worse toward night. Patch tests with material from the dental plates applied to the forearm produced a marked reaction in both patients. Control tests were negative. In the third patient there was a triangular area of redness on the tongue corresponding to the size of a patched area in a dental plate. In the 3 cases elimination of the offending materials brought about cure; relapses occurred when the dentures were again used.

A CASE OF CONTACT DERMATITIS PRODUCED AT A DISTANCE BY THE SENSITIZING AGENT. J. B. BIEDERMAN, J. A. M. A. **106**:2236 (June 27) 1936.

A patient exhibiting an eczematous eruption on his hands and feet was found to be sensitive to three different brands of gasoline when test sites on his forearms were exposed to vapors from these gasolines. Biederman then exposed areas of normal skin to the three brands of gasoline daily for eight days, and twice daily for the next four days. On the first seven days after the start of this experiment only the exposed site became inflamed. On the eighth day the popliteal areas became

involved. By the twelfth day the eruption had spread over both legs, and on the thirteenth day it had become generalized. According to Biederman, this experiment suggests that after repeated exposure to a sensitizing agent, that agent can be absorbed and affect areas of the skin with which it does not come in direct contact.

PACHYONYCHIA CONGENITA. E. B. TAUBER, L. GOLDMAN and H. CLAASSEN, J. A. M. A. **107**:29 (July 4) 1936.

The patient whose case is reported was a Jewish girl aged 20. The condition began at, or shortly after, birth. When the patient was observed she exhibited pachyonychia, palmar and plantar keratoses, leukoplakia and atrophy of the tongue and generalized mild ichthyosis. The development of large, painful bullae on her feet was considered due in part to repeated trauma and friction.

THE TREATMENT OF CHRONIC VARICOSE ULCERS BY MEANS OF ACETYL-BETA-METHYLCHOLINE CHLORIDE IONTOPHORESIS. L. SAYLOR, J. KOVACS, A. W. DURYEE and I. WRIGHT, J. A. M. A. **107**:114 (July 11) 1936.

Twenty-six patients exhibiting chronic varicose ulcers were treated by means of acetylbetamethylcholine chloride iontophoresis, and healing of all but two of the ulcers resulted within a few weeks. The method of application was as follows: Reenforced asbestos paper was saturated with a 0.5 per cent solution of the drug and wrapped around the foot and leg as high as the knee, the ulcer being left uncovered until a firm scab had formed over it. A plate of malleable metal was placed over the wet asbestos paper and connected to the positive pole of a galvanic machine. A current of from 20 to 30 milliamperes was used; the treatments lasted from twenty to thirty minutes and were given two or three times weekly. Systemic reactions were rarely noted. The local reaction was characteristic and consisted of (1) a feeling of prickling followed by warmth during the treatment; (2) the appearance of goose flesh immediately after removal of the asbestos paper; (3) a local blush of the skin; (4) sweating of the skin, which in some cases continued for from six to eight hours; (5) an elevation in surface temperature during treatment followed by a drop during profuse sweating (with accompanying evaporation) and a rise above the former level in from one-half to five hours. The authors state that when possible obliteration of the causal veins should be undertaken later. They state that when this cannot be carried out because of a coexisting disease, such as diabetes mellitus or phlebitis, the iontophoretic treatment which they describe is suitable for prophylaxis of recurrent varicose ulcer.

GLOMUS TUMOR: ARTERIAL ANGIONEUROMYOMA OF MASSON. H. N. COLE and W. E. SROUB, J. A. M. A. **107**:428 (Aug. 8) 1936.

Cole and Sroub report that a woman, aged 33, had a pain in the little finger of seven years' duration. The pain had become increasingly severe. There was no history of preceding trauma. A small reddish blue area was noted beneath the nail. Surgical intervention revealed an encapsulated tumor 1 by 0.5 cm. in the subcutaneous tissue. In histologic sections many long vascular spaces lined with flat endothelial cells were noted. Epithelioid cells and also numerous mucoid-like areas representing neural elements of the glomus were observed outside these spaces.

LEWIS, New York.

ON THE AETIOLOGY OF ERYTHEMA NODOSUM. LOUIS FORMAN, Brit. J. Dermat. **48**:123 (March) 1936.

Forman supports the Continental concept that erythema nodosum is a reaction of a sensitized skin to many bacterial antigens, including the tubercle bacillus, the hemolytic streptococcus, the bacillus of soft sore and the virus of lymphogranuloma venereum. He reports thirty-one cases which were investigated rather carefully and followed. In most of the fifteen cases occurring in children aged from

3 to 15 years there was strong evidence of tuberculous etiology, while in the majority of cases in persons aged from 20 to 68 the condition seemed due to the hemolytic streptococcus, as revealed by immunologic tests. In the latter class, lesions tended to be large and painful. Recurrence of erythema nodosum is common. The prognosis is better for adults than for children. PACE, Evanston.

THE SURGICAL TREATMENT OF CHRONIC RADIATION DERMATITIS. S. GORDON, Canad. M. A. J. **34**:622 (June) 1936.

In the surgical management of roentgen sequelae, adequate excision followed by some type of plastic repair is usually necessary. No other type of treatment of some lesions of radiation dermatitis makes it possible to relieve symptoms (chiefly pain), repair deformity and remove the danger of malignant change. Each case presents an individual problem.

SYPHILIS OF THE PLACENTA. P. J. KEARNS, Canad. M. A. J. **34**:625 (June) 1936.

Kearns describes the histologic appearance of the syphilitic placenta at the different months of gestation. He outlines a technic for sectioning the placenta for examination and states that when evidence of syphilis is observed in the placenta, a search for spirochetes in the blood from the cord as well as a serologic study of the mother's blood should be made. Of patients in whom evidence of syphilis was observed in the placenta, only from 50 to 60 per cent had positive Wassermann reactions.

A CASE OF RECTOVAGINAL FISTULA AND STRICTURE OF THE RECTUM DUE TO LYMPHOGRANULOMA INGUINALE. H. W. JOHNSTON, Canad. M. A. J. **35**: 66 (July) 1936.

The case reported is that of a woman, aged 25, whose husband suffered from inguinal abscesses with sinuses. Both the husband and the wife showed a positive Frei reaction. When the patient was first observed, six months after the onset of the disease, there was widespread involvement of the inguinal, anal, pelvic and rectal lymph nodes. A rectal stricture and a rectovaginal fistula were present. Treatment consisted of intravenous injections of a 1 per cent solution of antimony and potassium tartrate in saline solution, the dose being increased from 2 cc. to 7 cc. and injections being administered twice a week. At the end of six weeks 75 cc. had been given and there was marked improvement. There was little reaction from the injections. LEWIS, New York.

SHORT WAVES IN DERMATOLOGY. A. REUTE, Dermat. Wchnschr. **102**:1 (Jan. 4) 1936.

Reute reports the results obtained with an apparatus producing wavelengths of 6 meters (Ultratherm of Siemens). Furuncles, abscessed sweat glands, erysipelas, pernio, scleroderma in the acute stage and lupus vulgaris were benefited. He states that it is important to master the technic before attempting to use this method of treatment.

RELATIONSHIP BETWEEN RECURRENT HERPES AND URTICARIA. GERHARD ZEHRER, Dermat. Wchnschr. **102**:6 (Jan. 4) 1936.

A child had had recurrent herpes for some time. One of the lesions was impetiginized, and a generalized urticaria developed. The author discusses the mechanism of this process, particularly in the light of Milian's stand that urticaria is always due to a focus of infection. He concludes that some allergic factor was present and that the pyogenic infection was active, as later attacks of herpes were not accompanied by urticaria.

CHANGES IN THE BIOLOGIC FUNCTION OF THE SKIN IN CUTANEOUS TUBERCULOSIS. N. A. SCHESTAKOWA, Dermat. Wchnschr. **102**:44 (Jan. 11) 1936.

According to Schestakowa, Müller reported that the injection of various foreign proteins intradermally caused a temporary fall in the number of leukocytes in patients with a normal skin. Schestakowa gave intradermal injections of milk to a group of 85 patients with tuberculosis of the skin, granuloma annulare, lupus erythematosus and pulmonary tuberculosis and made blood counts periodically before and after making the test. In the patients with pulmonary tuberculosis the phenomenon was always present, indicating an unimpaired cutaneous biologic function. In the patients with long-standing cutaneous tuberculosis the phenomenon was absent.

A CASE OF ERYTHEMA CHRONICUM MIGRANS, LIPSCHÜTZ. ALBIN PROPPE, Dermat. Wchnschr. **102**:47 (Jan. 11) 1936.

A 49 year old woman was bitten by a tick. The insect was completely removed within a short time. Two or three days later a circinate lesion developed which spread slowly and was still present three months later. The author suggests the possibility of a virus as the causative agent.

DYSTROPHIC CALCIFICATION IN A CASE OF VARICOSE ULCER OF THE LEG. J. WENDLBERGER, Dermat. Wchnschr. **102**:50 (Jan. 11) 1936.

Wendlberger reports the case of a patient who had had a varicose ulcer for one year. Hard particles could be palpated in the tissue around the ulcer, and bits of stony substance frequently worked out of the ulcer. Roentgen examination showed the presence of a considerable amount of some opaque substance scattered around the ulcer. These particles were chemically proved to be calcium salts.

PSORIASIS VULGARIS AND PYODERMA. L. N. MASCHKILLEISSON and L. A. ABRAMOWITSCH, Dermat. Wchnschr. **102**:102 (Jan. 25) 1936.

The authors describe two cases of long-standing psoriasis in which cutaneous pyogenic infections developed. After the subsidence of the pyoderma in each instance, the psoriasis flared up, new lesions developing in the healing pyogenic lesions. They conclude that the rareness of pyogenic dermatoses in patients with psoriasis is due to the fact that their skin responds to any type of irritation by the usual parakeratotic reaction.

THE PATHOLOGY OF CUTANEOUS VASCULAR DISEASE: III. ARTERIOSCLEROSIS OF THE SKIN. ALBERT WIEDMANN, Dermat. Wchnschr. **102**:69 (Jan. 18) 1936.

Few contributions have appeared in the literature in regard to histologic changes of the cutaneous blood vessels in arteriosclerosis. The general opinion is that such changes occur rarely. Wiedmann reports observing changes similar to those in the skin in other organs, especially in the kidneys. The changes consisted of hyalinization of the walls of the precapillary arterioles and of hypertrophy of the elastica in the arteries of the middle region of the cutis.

EXPERIMENTAL INVESTIGATIONS OF THE ETIOLOGY OF MICROSPOROSIS. ANDREAS DÓSA, Dermat. Wchnschr. **102**:75 (Jan. 18) 1936.

The author made extracts of cultures of microsporons and trichophytons and injected them into patients with typical microsporosis before and after therapy by roentgen epilation. The microsporin caused positive reactions in 20 per cent of the cases, while in 35 per cent there were positive reactions to the trichophytin. After epilation an increase in the number of positive reactions to trichophytin was noted. This did not occur with the microsporin. The results of the investigation indicate that there is a close relationship between the organisms from which cultures were prepared.

LICHEN ZONIFORMIS SYPHILITICUS? O. DITTRICH, Dermat. Ztschr. **72**:305 (Jan.) 1936.

The author describes the case of a 26 year old woman who had a unilateral and zoster-like lichenoid eruption on the trunk. The individual papules had the clinical appearance of lesions of lichen planus. The Wassermann reaction of the blood was positive, but the spinal fluid was normal. Biopsy showed features of both lichen planus and syphilis. The eruption cleared promptly as a result of anti-syphilitic therapy.

TAUSSIG, San Francisco.

TABES DORSALIS WITH SPONTANEOUS FRACTURES. HEINZ KONWALINKA, Wien. klin. Wchnschr. **48**:1443 (Nov. 22) 1935.

Heinz Konwalinka reports a case of tabes dorsalis in an 11 year old girl who exhibited two noteworthy features: spontaneous fractures and severe digestive disturbances. There is little mention in the literature of trophic disorders of the skeleton in cases of this disease, but in the author's case the spontaneous fractures were an outstanding symptom. Within a period of two years there were fractures of the neck of the femur, of the femur itself, of the tibia and of the fibula. The apparent causes of the breaks were insignificant, and there was no trauma or pain. The roentgenogram of the right femur showed considerable callus formation, which has been described by Kienböck as characteristic of fractures in cases of tabes dorsalis. The callus formation did not prevent pseudo-arthrosis. Another unusual feature of the condition in this case was the severe digestive disturbance and nervous diarrhea, which led to a poor nutritional state.

ABT, Chicago. [AM. J. DIS. CHILD.]

RESEARCHES ON THE MECHANICAL CHARACTERISTICS OF THE SKIN BY A NEW METHOD. J. JOCHIMS, Ztschr. f. Kinderh. **56**:81 (Feb.) 1934.

Jochims made direct measurements of the elasticity, retractility and thickness of the skin by a specially devised apparatus. This consists in principle of a pincer-like device, the ends of which are loosely held parallel plates which when placed firmly against, and perpendicular to, the skin allow the operator to retract a full thickness of skin between the plates.

By means of calibrated scales on the handle end of this device, the author was able to read off directly the three following quantities: (1) the total force necessary to squeeze the skin into this position, (2) the retractile force exerted by the displaced skin and (3) the thickness of the skin.

He establishes norms for these quantities for the normal skin.

He found that the total force necessary to squeeze the skin of healthy nurslings was approximately twice as great as the retractility. In dystrophic nurslings both the total force and the retractility were diminished in proportion to the severity of the dystrophy, and the difference between these two forces was also diminished. In patients with toxic conditions, on the other hand, only the retractility of the skin was decreased, while the total force necessary for compression remained high. The author interprets the magnitude of the retractile force as a function of the degree of elasticity of the skin, whereas the total force necessary for compression not only is a measure of the elastic tension but is dependent on the nonelastic elements in the skin. The difference between these two measurements would therefore be a measure of the degree of nonelastic tension of the skin.

It is suggested that by this method quantitative expressions for such heretofore vaguely defined terms as "poor tissue turgor," "edematous skin" and "inelastic skin" will be possible.

XERODERMA PIGMENTOSUM IN RICKETS. GEZA PETÉNYI, Ztschr. f. Kinderh. **56**:197 (April) 1934.

A 9 year old child with xeroderma pigmentosum was found by Petényi to suffer from late rickets.

He attributes the rickets to the chronic cutaneous disease which changes ergosterol to vitamin D in large amounts.

ECZEMA AND EXTERNAL CUTANEOUS IRRITATIONS OF CHILDREN. T. BECKER, S. BORNSTEIN and H. FINKELSTEIN, Ztschr. f. Kinderh. **56**:253 (April) 1934.

Becker, Bornstein and Finkelstein found no primary increased vasomotor sensitivity of the skin in eczematous children but noted a secondary irritation of the capillaries in eczematous patients. They employed the test with cantharides to determine whether the superficial cutaneous erosion differs in eczematous and noneczematous patients and found that in persons with seborrheic dermatitis healing is slower and there are increased infiltration and desquamation. The authors believe that seborrheic dermatitis is of alimentary origin but that eczema is not.

LEVINSON, Chicago. [AM. J. DIS. CHILD.]

INVESTIGATION OF RESORPTION OF SUBSTANCES THROUGH CUTANEOUS AND MUCOUS SURFACES: AN ATTEMPT TO IMMUNIZE BY PERCUTANEOUS APPLICATION OF VACCINE (EXPERIMENT WITH TYPHOID VACCINE). S. MATSUMOTO, Acta dermat. **25**:92 (June) 1935.

Percutaneous application of 1 Gm. of ointment containing 13 mg. of typhoid vaccine to the skin of the rabbit caused a marked increase in the agglutination power of the blood. A high agglutination titer could also be produced by daily percutaneous application of from 5 to 10 mg. of typhoid vaccine during two or three weeks on an area of several square centimeters of skin. If a rapid rise of immunity is desired, the dose of vaccine may be safely increased without fear of any considerable local or general reaction. Vaccine ointment containing 100 mg. of typhoid bacilli, when applied to the skin and replaced three times a week creates an immunity of a satisfactory strength without producing any by-effects.

Matsumoto has found that the percutaneous application of vaccine is a convenient means of bringing about active immunization without producing any reaction, although an enormous quantity of bacteria is used as compared to the dosage given by the subcutaneous or intravenous method. The skin acts as a filter against invasion of the substance in the vaccine which usually produces the by-effects.

The need of a larger quantity of vaccine for such a method will probably make its use on a larger scale a little difficult, but, on the other hand, when the vaccine is used percutaneously it is unnecessary to purify it for the purpose of diminishing untoward reactions.

INVESTIGATION OF RESORPTION OF SUBSTANCES THROUGH THE SKIN AND MUCOUS MEMBRANES: IMMUNIZATION THROUGH CUTANEOUS APPLICATION OF TYPHOID VACCINE. S. MATSUMOTO, Acta dermat. **26**:109 (Dec.) 1935.

Matsumoto found that 1 drop of concentrated typhoid vaccine or filtrate introduced through scarification into the skin of rabbits raised the immunity titer as quickly as subcutaneous vaccination. He found this method of vaccination also of value in men. The skin forms a barrier against resorption of substances contained in the vaccine which are the cause of disagreeable by-effects.

BLOOM, New York.

OBSERVATIONS ON A TRICHOPHYTON (MICROSPORON FULVUM) PARASITIC TO MAN CULTIVATED FROM THE MONKEY. M. HASEGAWA and K. YAMAMOTO, Jap. J. Dermat. & Urol. **39**:220 (Feb.) 1936.

Up to the present there has been no report of the transfer from monkey to man of a cutaneous disease due to a fungus. The authors have, however, secured from the heads of three monkeys indigenous to the Ladrone Islands a microsporon which apparently produced a typical kerion Celsi when inoculated into the scalp of a boy aged 5 years and caused a papulovesicular lesion on the inner aspect of the thigh in two middle-aged men. The organism proved parasitic also to cats, rabbits, guinea-pigs and mice. Culturally and microscopically it most nearly resembled Microsporon fulvum.

EXPERIMENTAL STUDY OF THE INFLUENCE OF ECZEMATOUS CUTANEOUS CHANGES ON THE BONE MARROW. M. GYOTOKU, Jap. J. Dermat. & Urol. **39**:255 (March) 1936.

In previous studies Gyotoku has shown the decrease in the number of erythrocytes and the increase in that of leukocytes with the Arneth shift in rabbits with induced (croton oil) dermatitis. These changes in the blood were also present in clinical cases of dermatitis, but so far the study of the blood has not been supplemented by study of the number of cells in the bone marrow. In this study the marrow of the upper end of the tibia of the hindleg of the rabbit was curetted out, smeared on a glass slide and stained by the method of Giemsa, the marrow from the right tibia being used before and that from the left side after the dermatitis. Both the examination of the marrow and the blood counts showed a decrease in the number of erythrocytes and an increase in the number of leukocytes, particularly during the acute stage of the dermatitis. In the peripheral blood the increase was chiefly in the mature neutrophils, while in the marrow it was mostly in immature forms (myelocytes, premyelocytes and metamyelocytes). In both the blood and the marrow there was a marked increase in the number of cells showing basophilic granulation, and since the author was unable to find any evidence of aging or of other regressive changes in the cells showing such stippling, he expressed the belief that they are merely immature granules which if they matured would be neutrophil granules. The increase in the number of immature cells in the marrow and the stippling are thought to be evidence of a stimulation of the leukopoietic function of the marrow probably by some toxic product of decomposition of the inflamed skin area, reaching the marrow through the blood stream. Thus the accompanying anemia might be an incidental effect of this toxin produced before the toxin reaches the bone marrow.

The only difficulty in accepting this toxic decomposition theory is the decrease in the number of normoblasts, as it is difficult to imagine a selective stimulation affecting the leukopoietic without at the same time affecting conversely the erythropoietic function. However, it is believed that the decrease in the number of normoblasts is merely apparent and due to the fact that they are counted in ratio to the abnormally increased neutrophilic leukocytes—in reality they are probably increased.

HISTAMINE-LIKE SUBSTANCES IN ARTIFICIAL DERMATITIS. T. ISOBE, Jap. J. Dermat. & Urol. **39**:272 (March) 1936.

Alcoholic extracts of determined weights of skin from the abdominal wall of rabbits were prepared by the methods used by Loos (*Ztschr. f. d. ges. exper. Med.* **75**:463, 1931; *Arch. f. Dermat. u. Syph.* **164**:199, 1931) and checked for their effect on the rate and force of the contractions of strips of excised intestine of guinea-pigs by means of kymographic tracings in determining whether and in what strength histamine is present in the skin and how it is affected by the production of artificial dermatitis. Loos in his work followed these methods but employed the whole ear of the rabbit; hence he worked not only with gross amounts of tissue but also with tissue other than the skin.

Isobe's work shows that a histamine-like substance is present in the normal skin in amounts of 1.7 mg. per kilogram and that the amount increases with the advent of dermatitis, the change being especially marked in sensitive persons; the variation is as a rule more pronounced the more severe the cutaneous reaction, and the amount gradually returns to normal as the cutaneous reaction disappears. This increase is found not only in the area of skin which is directly subjected to the irritative agent (urushi or crude Japanese lacquer, urushi oil or refined lacquer, gingko tree, radiation from a quartz lamp, roentgen rays and radium) but also in the nonaffected skin of the opposite side of the body. However, the concentration of the histamine-like substance is apparently never sufficient to explain the cutaneous reaction, and its effects are presumed to be expended in the production of the general reaction accompanying the dermatitis.

LATE RESULTS OF TREATMENT OF SYPHILIS WITH SPECIAL CONSIDERATION OF THE SEROLOGIC REACTION. K. SATO, Y. OTANI and I. YAMASAKI, Jap. J. Dermat. & Urol. **39**:339 (March) 1936.

Eighty-six syphilitic patients were reexamined. They had received more than five injections of neoarsphenamine combined with bismuth therapy in the clinic in Chiba, Japan, and their treatment, which was considered adequate, had been completed more than three years previously.

In forty-six cases all the reactions (Wassermann, Murata, Meinicke) of the blood and spinal fluid were negative; in twenty-two cases they were all positive, and in eighteen cases some of the reactions were negative or doubtful and others positive. In 22.2 per cent of cases of primary and secondary syphilis the reactions were positive; in those of tertiary syphilis the incidence of positive reactions was 50 per cent and in those of early latent and advanced latent syphilis it was 31.8 and 83.8 per cent, respectively. In the group of eight patients who had been treated by the maximal dosage method (Hoffmann) the results were disappointing; there were five positive reactions, four of which occurred in patients with treatment resistant syphilis. Sixteen of the eighty-six patients had positive reactions at the conclusion of their period of treatment, but a reversal to negative occurred later without further treatment.

In all these cases the incidence of involvement of the spinal fluid, aorta and auditory and visual organs was greater in the patients who had a positive serologic reaction of the blood.

STUDIES ON THE PYOGENIC BACTERIA OF THE SKIN: II. DIFFERENCES IN BIOLOGIC CHARACTERISTICS AND VIRULENCE OF THE STAPHYLOCOCCI FROM VARIOUS PYODERMAS. G. MURAMOTO, Jap. J. Dermat. & Urol. **39**:389 (April) 1936.

Bacteria from skin of 253 persons with normal skin or with some cutaneous disease were subjected to various tests in an attempt to determine characteristics which might aid in differentiating between pathogenicity and nonpathogenicity of individual strains of staphylococci. Muramoto found in this regard that the most valuable tests were the plasma coagulation test and intracutaneous tests on rabbits. Other tests of some value, in the order of their importance, are the glycolytic action (method of Yoshioka), the agglutination reaction and the intraperitoneal test of virulence for mice. The presence of a hemolytic halo in cultures on goat's blood agar and the results of titration of the filtrates of the staphylococcus bouillon culture against a 1 per cent suspension of sheep's blood corpuscles were only of corroborative value.

Results showed that Staphylococcus aureus was always more virulent than Staphylococcus albus or Staphylococcus citreus and that strains which were secured from patients with grave conditions (furunculosis, abscess, folliculitis, sycosis) gave a higher percentage of positive reactions to biologic tests and showed a more pronounced virulence for animals, uniformly corresponding results being noted.

J. W. BRENNAN, Chicago.

ON PRIMARY SCLEROSIS OF THE EYELIDS. Y. IGA and H. MASAKI, Lues: Bull. Soc. japon. de syph. **13**:175 (Feb.) 1936.

The authors found in the Japanese literature thirty-four cases of chancre of the eye; to these they add two cases of their own. An analysis of these thirty-six cases reveals that they constitute 41.7 per cent of all the cases of extragenital infection reported. Chancre of the eye occurs with the same frequency in males as in females. Half of the cases occurred in patients aged from 20 to 40; ten cases were in children under the age of 5 years. In twenty-four cases the chancre was localized on the eyelid and edge of the eyelid; in ten cases it was located on the conjunctiva, and in four cases it occurred at the inner or outer canthus of the eye. The right eye and the lower lid were slightly more frequently involved than the left eye and the upper eyelid. In most of the cases there was one chancre; in

one case there were double chancres on the right eye and one chancre on the left eye. Of twenty-one cases in which a microscopic examination was made spirochetes were observed in eighteen. The Wassermann reaction of the blood was positive in nineteen out of twenty-one cases. In four cases the infection was contracted from a syphilitic person who licked the eye. In eight cases other members of the family had syphilis; in two of these the patient was infected by a child with congenital syphilis, and in five the infected person had close relatives who had latent syphilis. An 18 year old girl had a genital chancre, from which she probably infected her eye by autoinoculation. Four patients had trachoma, two had hordeolum, and others suffered from blepharitis and erosions, which conditions probably favored the development of the primary lesion.

BLOOM, New York.

POSTPRIMARY ERYTHEMA NODOSUM. ARVID WALLGREN, Acta tuberc. Scandinav. **9**:1, 1935.

A positive reaction to tuberculin associated with erythema nodosum appears as a rule at the same time as the first tuberculous manifestation in the organism at the termination of the period of incubation (primary erythema nodosum tuberculosum). Sometimes it appears in persons who have reacted positively to tuberculin for a long time; the erythema then may be due to a secondary rise of the allergic response (postprimary erythema nodosum tuberculosum), or it may be caused by an agent which has nothing to do with the existing tuberculous infection (nontuberculous erythema nodosum). Wallgren reports fourteen cases of postprimary erythema nodosum tuberculosum. In four cases the erythema developed from one to two days after measles, in five cases from three to four weeks after the beginning of whooping cough, in four cases after tonsillitis and in one case during an attack of enterocolitis. There was an aggravation of the preexisting tuberculous lesion in only two cases (after measles); in the twelve remaining cases the tuberculous state was unchanged. The course of the postprimary type, as a rule, is much shorter than that of the primary type. Taking everything into consideration, there is therefore reason to regard the prognostic outlook in the postprimary type of the disease as much brighter than that in the primary type, as far as the length of the necessary care and the probabilities of simultaneous clinical tuberculous disease are concerned.

CUTIS MARMORATA TELANGIECTATICA CONGENITA. H. TONSETH, Norsk mag. f. lægevidensk. **96**:891 (Aug.) 1935.

In 1932 Lohuizen described a peculiar congenital anomaly of the skin, consisting of a general dilatation of the superficial veins causing a marmorated aspect. He called it cutis marmorata telangiectatica congenita. Tonseth has observed another case of the same congenital disease in a new-born girl. The changes were most pronounced on the head. There were signs of malnutrition of the skin, with oblong areas of necrosis following the direction of the distended veins. The telangiectasis healed, leaving scars.

WALLGREN, Göteborg, Sweden. [AM. J. DIS. CHILD.]

Society Transactions

PHILADELPHIA DERMATOLOGICAL SOCIETY

VAUGHN C. GARNER, M.D., *Chairman*

Sept. 18, 1936

THOMAS BUTTERWORTH, M.D., *Secretary*

CHRONIC DISCOID LUPUS ERYTHEMATOSUS; BEGINNING DISSEMINATION(?). Presented by DR. J. LAMAR CALLAWAY for DR. JOHN H. STOKES.

B. E., a woman aged 37, presents over the face, neck, chest, back and arms a scaling erythematous eruption which is urticarial in some areas and is associated with atrophy and follicular plugging. Telangiectasia and pigmentation are present. Many of the lesions are confluent. The condition appeared in 1930 after the areas had been exposed to the rays of the sun. The patient received thirty-nine injections of gold sodium thiosulfate, and in 1932 she was apparently cured. In July 1936 she had a recurrence of the eruption over the face, arms, neck, chest and back. Treatment with gold sodium thiosulfate was begun cautiously. After seven injections there was little improvement. The patient was given 2 grains (0.13 Gm.) of quinine three times a day. After she had received nine injections of gold sodium thiosulfate she had a severe flare-up, consisting of an urticarial, fiery red and spreading eruption. At present she is receiving bismuth and quinine. There are no constitutional symptoms. The Wassermann reaction of the blood was negative. Urinalysis gave normal results. Examination of the blood revealed 4,800 white cells. The differential cell count showed 73 per cent neutrophils, 23 per cent small lymphocytes, 3 per cent large lymphocytes and 1 per cent eosinophils.

DISCUSSION

DR. CARROLL S. WRIGHT: This summer I have had two patients with a condition exactly like that exhibited by this woman. In both patients the eruption flared up markedly after they had been exposed to the sun's rays. One of these patients was a physician's wife who was staying in the Adirondacks. I advised her to start taking a gold preparation this fall and gave her a prescription for calamine lotion. By the time she returned the condition had cleared up. It was undoubtedly lupus erythematosus. The other patient, a man, started to take 10 mg. of a gold preparation, and his condition has virtually cleared up. I recall that last year when in so many cases flare-ups were reported to occur after exposure to the sun's rays I stated that I had not observed a single instance myself, but apparently all dermatologists are now observing many cases in which this condition is made worse by exposure to the rays of the sun.

DR. ROBERT L. GILMAN: I think that in some of the cases in which a flare-up occurs in the summer quinine may be contraindicated. It might be better to reserve that medication for a season in which there is less sun.

DR. FRED D. WEIDMAN: I wish to comment on the remarkable symmetry of this eruption. It has an almost perfect erythema multiforme distribution. It is known that coal tar products, such as antipyrine and to a lesser extent acetylsalicylic acid, and other agents may produce erythema multiforme and that in certain persons sunlight accentuates the process. I recall that Dr. Pond studied a patient, an architect who was forced to change his job to one which occupied him only at night because when he worked during the day he had an eruption resembling erythema multiforme. The ingestion of acetylsalicylic acid or of any of the

salicylates always accentuated it. Sensitivity to coal tar (sunlight synergy) and lupus erythematosus may have something in common in their pathologic process, and if that is true quinine should be avoided. At least one should determine whether there is anything like a synergic effect of quinine and sunlight in cases of lupus erythematosus, as there appears to be such an effect in some cases of erythema multiforme.

DR. SIGMUND S. GREENBAUM: In the one patient I have observed three flare-ups resulting from exposure to sunlight, and a fourth flare-up resulted in an acute exanthematous type of lupus erythematosus which terminated fatally. I think it is fairly well recognized that lupus erythematosus of the superficial type is liable to be made worse by exposure to the rays of the sun, whereas that of the fixed type is not aggravated in that way. I have seen patients with the latter type who could remain in the sunlight for hours at a time without any ill effect.

DR. ROBERT L. GILMAN: A physician has had considerable success with a preparation of liver and stomach extract and iron administered by mouth to persons who are photosensitive; particularly young women with blond and reddish hair have been benefited. By administering three or four capsules of that preparation per day, he has enabled these persons to go out in the sun and acquire a good tan instead of the sunburn they usually exhibit. I wonder whether this procedure might not be applicable or useful in cases of lupus erythematosus in which there is associated intolerance to sunlight.

DR. EDWARD F. CORSON: There does not seem to be a consensus as to the use of gold preparations in these cases; it rather appears that there is no settled policy. Some observers go so far as to say that it is like writing the patient's death certificate to administer a gold compound in cases of lupus erythematosus. Others seem to consider that there is no contraindication, and they boldly administer such medication with some good results.

DR. VAUGHN C. GARNER: I think the problem is, in part at least, dependent on whether the case is one of chronic lupus erythematosus undergoing dissemination without constitutional symptoms or of acute lupus erythematosus with violent constitutional symptoms. The patient presented has shown no constitutional symptoms. She is afebrile, she has no involvement of the joints, but she does have a moderate leukopenia. She has chronic lupus erythematosus undergoing some clinical dissemination, probably initiated by sunlight. These considerations may be the answer to the problem of therapy.

DR. CARROLL S. WRIGHT: I think Dr. Garner has hit the nail on the head. The only patient with this condition Dr. Schamberg and I ever lost was a girl who had constitutional symptoms. That was in 1924 or 1925. A gold preparation should never have been used, but we did not know that at that time. We are not even sure that the patient died as a result of the therapy. Now we should not use a gold preparation under those circumstances, but in a case such as that under consideration I should not hesitate a minute to use that treatment, provided a very small dose was used at first.

A CASE FOR DIAGNOSIS. Presented by DR. CARROLL S. WRIGHT.

E. I., a woman aged 43, has had for eight years a recurrent eruption on the face, which appears each year in the spring. The lesion which is now present on the right cheek developed last July; on August 5 it was elevated and measured approximately 1½ inches (3.81 cm.) in diameter. The lesion was roughly nodular and dull red and had a boggy induration. Smaller inflammatory lesions have appeared in the last two weeks.

Examination of the blood showed 84 per cent hemoglobin, 4,600,000 red cells and 5,700 white cells. The Wassermann and the Kahn reaction of the blood were

negative. One roentgen treatment caused a diminution of about 25 per cent in the size of the lesion.

DISCUSSION

DR. CARROLL S. WRIGHT: Originally I made a diagnosis of sarcoid, but tonight I was surprised to observe that there had developed on the left leg a new acute inflammatory lesion, which faded out on pressure. For that reason I listed the case as "A Case for Diagnosis." The lesion appeared since I saw the patient on Monday.

DR. FRED D. WEIDMAN: The definite infiltration, the translucence with brownish cast and the absence of definite nodules cause me to think that the condition might be sarcoid of Boeck.

DR. SIGMUND S. GREENBAUM: I noticed a number of lesions on the patient's forehead that are not suggestive of acne but rather point to an infiltrative condition. The diagnosis that came to my mind was that of a possible abortive rosacea-like tuberculid with a change in one of the lesions into the sarcoid.

DR. DONALD M. PILLSBURY: Is the diagnosis of sarcoid tenable in the face of complete involution every year, with recurrence in the summer?

DR. CARROLL S. WRIGHT: That is another feature that made me question my first diagnosis, which had been based purely on the clinical appearance of the lesion on the right cheek—the only one the patient had when I first saw her. On Monday she had three or four more lesions, and then she told me for the first time that the eruption had occurred in the summer and disappeared in the winter. I am not certain that the condition is sarcoid.

A CASE FOR DIAGNOSIS. Presented by DR. ABRAM STRAUSS.

M. W., a man aged 40, presents circinate purpuric lesions, many of which show central clearings, on the tibial surface of both legs. The eruption developed more than three weeks ago and has been practically stationary since the initial outbreak. A few lesions have occurred occasionally, but almost all the lesions have been present a little over three weeks. The patient had no pain or rheumatic condition before the lesions appeared, and he stated that he had taken no drugs. The only significant thing in his history was that he had had empyema, for which he was operated on a few years ago. There are no lesions in the mouth or on any part of the body other than those mentioned.

DISCUSSION

DR. FRED D. WEIDMAN: I should regard the condition as purpura circinata. The centers of the lesions do not appear to be hyperpigmented or scaly, which would be expected if the condition were Majocchi's disease, unless it is an extremely early stage. I am not informed on that point, but in an early stage the omission may not be significant. When I first saw this patient his eruption reminded me of a photograph made by Dr. Henry W. Stelwagon in a case of what was labeled "purpura circinata." Those conditions are closely allied to erythema multiforme, the exudative and infiltrative features being, of course, lacking. There is no question that there are purpuric spots in the lesions and a beginning hyperpigmentation.

DR. CARROLL S. WRIGHT: When I was a member of Dr. Wile's staff in 1920, one of the other members had a similar eruption, which appeared rather suddenly. Dr. Wile at that time suggested the possibility of Majocchi's disease, and shortly afterward Dr. Fred Wise visited the clinic and made the same diagnosis. Those lesions persisted for several months and then, without any treatment, disappeared.

DR. ABRAM STRAUSS: Are there any hematologic or histologic features which are typical of Majocchi's disease?

DR. FRED D. WEIDMAN: The histologic picture is rather distinctive. It consists essentially of a telangiitis, manifested by swelling of the endothelium, infiltration of the capillary walls and nearby tissue spaces with leukocytes or even thrombosis.

A CASE FOR DIAGNOSIS (ANESTHETIC TYPE OF LEPROSY?). Presented by DR. J. M. SCHILDKRAUT, Trenton, N. J.

K. S. H., a Mongolian woman aged 21, two years ago noticed an erythematous area surrounding the site of the scar of a burn on her left arm. At present this area is about 2½ inches (6.5 cm.) in diameter; it is irregularly rounded, macular and of a dirty gray color. Last October a similar patch about the size of a 50 cent piece developed on the left forearm. On the back of the left hand are a few bluish red coin-sized lesions which have developed recently. The patient complains of numbness of the left hand and arm and states that the lesions have impaired sensation. Recently macular lesions have appeared on the left cheek and at the edge of the upper lip at the left angle of the mouth.

Repeated smears from material from the nose, made after the patient had taken potassium iodide, have shown no Hansen bacilli.

DISCUSSION

DR. FRED D. WEIDMAN: I palpated the ulnar nerve, pressing on it as forcibly as I could, and I even made it bounce sidewise; yet the patient stated that she experienced no unpleasant sensation. She did not even feel that electricity-like reaction which laymen refer to as a knock on the "funny bone." However, I should say that further work, including a biopsy and roentgenograms of the bones, will have to be made before a diagnosis can be arrived at. I am unwilling to make a diagnosis on the basis of this brief examination.

DR. B. L. KAHN: Is it possible for an actively inflammatory condition to be present in cases of leprosy? This patient exhibits a distinct area of inflammation with increased circulation and elevation of temperature.

DR. J. M. SCHILDKRAUT, Trenton, N. J.: In early stages of the disease inflamed macules and even hyperesthesia may be present. The fact that this patient comes from a country in which leprosy is prevalent, and, furthermore, the fact that I was unable to associate the anesthesia with any condition like syringomyelia or to ascribe the appearance in the diseased area to other conditions like scleroderma or morphea, incline me to a diagnosis of the anesthetic type of leprosy. A year or two ago my co-workers and I observed a similar condition, and the biopsy showed merely a tuberculous type of structure, which to my mind may have been suggestive of possible leprosy as long as there were no nodules clincially.

DR. SIGMUND S. GREENBAUM: I think I should call the condition leprosy.

DR. EDWARD F. CORSON: I could not quite understand the answers which the patient gave. I questioned her as to whether the burns were painful when they were inflicted, for frequent burning often causes anesthesia. Several years ago I observed a case in which the smoking of cigars caused repeated burning of the fingers, the patient allowing the cigars to burn too far down and to encroach on the dermal tissues. The mere fact that this patient frequently burns herself seems to be an evidence of anesthesia.

DR. J. M. SCHILDKRAUT, Trenton, N. J.: I inquired about the first burn; the patient told me that it was caused by iodine which she had put on the first lesion.

DR. SIGMUND S. GREENBAUM: In order to confirm the diagnosis it might be necessary to try to examine the ulnar nerve by puncture.

VAUGHN C. GARNER, M.D., *Chairman*

Oct. 16, 1936 *

THOMAS BUTTERWORTH, M.D., *Secretary*

ADENOMA SEBACEUM IN AN EPILEPTIC MORON. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

R. B., a youth aged 18, has pinhead-sized flesh-colored, yellowish and reddish nodules over the nose, cheeks and chin. Many of the lesions show dilated capillaries and a tendency toward confluence. There are a yellowish red infiltrated plaque in the left temporal region and a few flesh-colored soft and firm papules and nodules on the back. The patient was admitted to the Pennhurst State School in 1927, at the age of 9 years; he is a moron, his intelligence quotient being 73, and presents a behavior problem. Adenomas have been present since the patient was 7 years old and possibly longer. Epileptic seizures began in 1930. The behavior and epilepsy have become progressively worse. There has been a drop in the intelligence quotient from 73 to 60. The Wassermann test of the blood and examination of the spinal fluid gave negative results.

ADENOMA SEBACEUM IN AN EPILEPTIC IDIOT. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

CASE 1.—A. C., a youth aged 16, presents numerous flesh-colored, yellowish and reddish papules the size of a pinhead and larger on the nose, cheeks and chin. A large yellowish brown infiltrated plaque is present on the right temporal region, and there are a few flesh-colored nodules on the trunk. The patient suffers from a persistent cold erythema of the hands and feet and exhibits white atrophic scars on the scalp resulting from injury. He had no cutaneous lesions up to the age of 5 years, except a birthmark on the right side of the forehead. Epilepsy began after he was 6 months old. The eruption over the cheeks was first noted in 1927. When he entered this institution the patient had convulsions once a month; later the seizures increased in severity and frequency. The intelligence quotient was 13 when he was admitted, and at present it is 3.

CASE 2.—A. G., a girl aged 17, shows numerous flesh-colored and pink papules over the nose, cheeks and chin. On the right side of the forehead there is a large raised pink plaque, which has been present since the patient's birth. A large pigskin-like plaque is present on the lower portion of the back, and there are scattered soft papules over the trunk. The patient was admitted in 1929. She had had pneumonia followed by one epileptic seizure. After her admission to the institution she had no convulsions until 1933; since then the seizures have been increasingly severe. The adenomatous lesion was noticed in 1929. There was a Babinski sign in 1929; except for that finding the history is irrelevant. The Wassermann test of the blood and examination of the spinal fluid gave negative results.

CASE 3.—E. W., a girl aged 20, presents numerous fine pinpoint-sized flesh-colored and telangiectatic papules over the nose and chin, especially in the furrows of the nose. There are larger light brown plaques on the forehead and scattered soft flesh-colored papules on the trunk. The lesions on the face appeared after 1929 and apparently were somewhat progressive. The medical history is essentially irrelevant, and the Wassermann test of the blood and examinations of the spinal fluid gave negative results.

CASE 4.—I. A., a girl aged 18, presents over the nose and cheeks numerous flesh-colored and brownish papules. There are a dull red plaque on the forehead

* This meeting was held at the Pennhurst State School, Spring City, Pa.

and scattered firm papular nodules on the trunk. The patient had cutaneous lesions when she was admitted in 1931. Epileptic seizures began in 1934 and have become progressively worse. The medical history is essentially irrelevant. The Wassermann test of the blood and examinations of the spinal fluid gave negative results.

EARLY ADENOMA SEBACEUM AND MILIA IN AN EPILEPTIC MORON. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

M. L., a woman aged 28, presents a few flesh-colored, pink and tiny red papules about the nose and numerous milia over the cheek bones. When she was admitted to the hospital, in 1926, her intelligence quotient was 39 and her mental age 6 years and 3 months. At present her intelligence quotient is 43 and her mental age 6 years and 10 months. The knee jerks are exaggerated. The Wassermann examination of the blood gave negative results.

DISCUSSION

DR. CARROLL S. WRIGHT: I wish to ask Dr. Butterworth whether he has any explanation of the peculiar patches over the back which two of these patients present.

DR. THOMAS BUTTERWORTH, Reading, Pa.: Five of the six patients present three different types of lesions: (1) discrete and confluent papules about the nose, (2) infiltrated plaques over the forehead and (3) flesh-colored pigskin-like nodules scattered over the trunk. In all six cases biopsies of the three types of lesions were made, and Dr. Weidman has a report on what he observed in each instance.

DR. FRED D. WEIDMAN: Dr. Butterworth took three biopsy specimens from each of the six patients. I believe that is the largest series that has ever been examined. I was impressed by the variation in the amount of sebaceous glands. Indeed, in one and the same section there sometimes was a difference. In one end a section obtained from one patient there was a definite hyperplasia and at the other end the picture was simply that of fetal skin; that is, the appendages were closely gathered together. It is known that in the embryo all the sweat glands which the person will ever have are represented in the skin. There is no new formation of sweat glands and sebaceous glands as the embryo develops, and therefore the sweat glands, being condensed over a rather small area, lie closer together. That is the picture which was present at one end of one of the sections studied. It appears that in the patient from whom that section was obtained there was aplasia of the skin at that point; the skin did not develop pari passu with the other parts of the body. I am curious to learn whether the hyperplasia of the sebaceous glands is a compensatory hypertrophy—just as in other parts of the body where there is deficiency in function it is compensated for by some other, perhaps by a near-by, part. In any event, the lesions of adenoma sebaceum are not true adenomas; they are sebaceous hyperplasias. I feel sure that if reconstruction of these lesions were possible it would show that there is a regular and orderly communication with the surface and that the lesions are therefore not adenomas but simply sebaceous hyperplasias. Perhaps if Dr. Butterworth could study each of the cases exhaustively he would find that when sufficiently large biopsy specimens are obtained a similarly marked variability in the amount of sebaceous hyperplasia is observed in each of the cases. Tonight I looked intently at all these lesions, and I must admit that, though all the descriptions stated that they were yellowish, I could not see yellow in many of them, except in M. L., the woman, with the milia, and the milia, of course, are not a part of the sebaceous process. Another thing which impressed me was the exaggeration of the adenomas at the angles of the nose. By pulling the nose to one side one could see in the crevice nodules much more numerous than elsewhere; this recalled strongly to me that other disease of a congenital nature, namely, multiple benign cystic epithelioma. Last year Dr. Goldman studied a family in which seven of the

members had multiple benign cystic epithelioma; he succeeded in getting five of those persons to my laboratory, and biopsy specimens were obtained from several. In addition to the commonly described localizations of those lesions, he discovered that they rather consistently occurred in front of the ear. Of course, the corners of the mouth are commonly affected; I did not see the latter localization in the cases of adenoma sebaceum presented tonight, but there is a similarity in the distribution of the lesions of adenoma sebaceum and in that of multiple benign cystic epitheliomas, both types occurring at the corners of the nose and in front of the ear.

As to the histologic observations in the three different types of lesions which Dr. Butterworth mentioned, one may say that the adenomatous lesions of the cheeks contained more or less hypertrophied sebaceous glands with an orderly arrangement—the picture was not truly adenomatous. Sweat glands were largely absent. In only one of the cases were sweat glands present in any considerable numbers. In one or two other cases there were perhaps one or two insignificant groups of sweat glands, and in three there was not a vestige of sweat gland. Hence this condition is not an involvement of the sebaceous apparatus alone but hypoplasia or even aplasia of the sweat apparatus. The blood vessels were not particularly conspicuous in the microscopic sections. The second type of lesions designated as adenomatous by Dr. Butterworth, which appeared on the forehead, also presented a sebaceous hyperplasia which was almost identical with that seen in the lesions on the cheeks. I dare say the difference in the clinical appearance may be referable to differences in the vascular material or capillaries in the lesions on the cheeks and up on the forehead. The third type of lesions, the pink ones on the back in which the orifices of the pilosebaceous apparatus gave a pigskin-like appearance, showed simply collagenous material. It was not the kind of tissue that is seen in Recklinghausen's disease; it was not neurofibromatous. It had the characters only of collagen. I consider this material to be of the nature of hamartoma. There is a tumor-like overgrowth of the lesion, and yet the lesion is not a tumor, because the normal structure of the tissues concerned is so faithfully reproduced.

I searched particularly for the state of the nerve tissue or for evidence of special neural structure immediately under the hyperplastic sebaceous glands, but I did not discover any abnormalities. Histologists say that in fetal life the development of nerve tissues from the subcutaneous parts precedes the formation of the appendages, so that the embryologist is able to predict from the locus of the nerves where the appendages on the surface will come down. I thought there might be some exaggerated neural development in this hyperplasia to account for the hyperplastic sebaceous material, but that I did not see. This is a comprehensive, and, I think, will turn out to be an instructive, study of adenoma sebaceum.

Dr. McClellan Wilson (by invitation): The association of adenoma sebaceum with lesions of the brain and mental deficiency and epilepsy is a characteristic finding. The mental deficiency may vary from idiocy up to any grade of moronity, and, of course, adenoma sebaceum may occur without mental deficiency. My co-workers and I had hoped to demonstrate some of these lesions in the brain, but the roentgenograms did not disclose them. It is possible that they would have been revealed if we could have made a ventriculogram, but we were somewhat cautious about that procedure because there is some mortality associated with it. The tumors may occur in the brain tissue—in the cerebrum particularly—and also in the walls of the lateral ventricle. They can be demonstrated only by a ventriculogram or a postmortem examination.

Dr. Donald M. Pillsbury: Is there any increased tendency to bromide acne or bromoderma in these cases?

Dr. McClellan Wilson (by invitation): Bromides have not been used. The majority of patients received phenobarbital.

ANGIOMATOSIS OF THE BRAIN ASSOCIATED WITH VASCULAR NEVUS INVOLVING THE TRIGEMINAL AREA IN AN EPILEPTIC IDIOT. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

S. L., a girl aged 20, presents violaceous patches scattered over the face, particularly on the left side. The lower lip is enormously enlarged by a vascular growth. She was admitted in 1927; at that time she had a hemangioma of the lip and epilepsy. Her intelligence quotient was 24. Seizures increased, and possible intracranial hemangioma was suspected. Roentgen examination revealed in the occipital region a cluster of parallel streaks of calcification in an angioma of the occipital lobe. An attempt was made to bring out the ramifications by the injection of colloidal thorium dioxide into the carotid artery. The internal carotid was well outlined, but no further clarification of the angiomatous process was noted. The Wassermann reaction of the blood was negative. The medical history is essentially irrelevant.

DISCUSSION

DR. FRED D. WEIDMAN: This case is a striking demonstration of a connection between the nervous system and changes in the skin; particularly of the manner in which vasomotor control may be influenced. Can any members of the institutional staff give information on that point? Is there any evidence that lesions of the central nervous system are transmitted through the cranial nerves, through the trigeminal nerve, for example?

DR. MCCLELLAN WILSON (by invitation): My co-workers and I first made an ordinary roentgenogram of this patient's head to demonstrate the angiomatous lesion in the brain. It is possible that there is some segmental distribution and that a lesion occurs in a corresponding region of the brain. However, I do not know that that holds true in all cases. Then we tried a procedure which has not been used to any great extent, namely, injection of colloidal thorium dioxide into the internal carotid artery, in an attempt to bring out these finer ramifications. The patient was uncooperative, and we had not had much experience with the procedure. All we were able to demonstrate was, as can be seen, the internal carotid artery. We had hoped to outline the small vessels accurately, but we were not able to. The occurrence of angiomas in the occipital lobe as well as in the temporal lobes of the brain is frequent. This girl has epilepsy, which is probably associated with the angioma, and that, plus her mental retardation—her mentality has decreased since she has been here—is a progressive process. We hope that permission for autopsy will be obtained and that we shall be able to determine if there are any of these vascular lesions which have not shown up. Many angiomas do not calcify and so cannot be demonstrated with the roentgen ray.

DR. DONALD M. PILLSBURY: In view of the sensitivity of angiomatous tissue to radiation and of the various improvements in the technic of irradiation of the brain, I wonder whether some attempt at treatment by means of irradiation might be made in this case.

DR. MCCLELLAN WILSON (by invitation): I am not an expert roentgenologist, but I think that the damage to the brain would be too severe, unless the skull could be opened or some similar procedure adopted.

DR. DONALD M. PILLSBURY: I know that Dr. Pendergrass, at the Temple University Hospital, has irradiated a large series of tumors of the brain with good results, but he has not treated any hemangiomas. Certainly, the amount of radiation necessary would not have much damaging effect on a relatively radioresistant substance such as brain tissue.

DR. THOMAS BUTTERWORTH, Reading, Pa.: Formerly boiling water was injected into some lesions. What do the members think of that method? No radium is available at this institution.

DR. CARROLL S. WRIGHT: If a small nevus responds to radium, as it is known to do, large ones undoubtedly would if enough radium could be used for a sufficient length of time. Heavy filtration has to be used even in treating a small nevus if

deep lying vessels are to be reached. That has been my experience with small nevi, but I have never had any experience with nevi of the size exhibited by this patient.

DR. DONALD M. PILLSBURY: I should think that these lesions could be satisfactorily treated by roentgen radiation. Injection of some sclerosing solution could be tried. About five or six years ago Wright reported a series of cases in which he used some of the preparations employed to treat varicose vein. Not much harm could result, at any rate.

EXTENSIVE ANGIOMAS OF THE RIGHT LOWER EXTREMITY ASSOCIATED WITH A PROBABLE ANGIOMA OF THE RIGHT RETROPERITONEAL REGION. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

L. W., a man aged 33, presents superficial and deep-seated soft bluish lobulated masses and plaques distributed over the right thigh, leg and foot. The toes are violaceous and bulbous. The process has existed since birth, and during childhood it became more extensive as the patient grew. The lesions have now become stationary.

The blood count was within normal limits; the urine showed a faint trace of albumin; the Wassermann reaction of the blood was negative. Roentgenograms of the right foot showed no bony changes or phleboliths. Studies of the lumbar and sacral portions of the spine showed the bones of those regions to be of normal texture. There was no spina bifida. On the left side the iliopsoas muscle was well visualized, but on the right that muscle was not well visualized in its entirety. This suggests some retroperitoneal process which may be identical with that present in the leg and foot.

DISCUSSION

DR. EDWARD F. CORSON: I was impressed by two interesting things about this case. 1. The patient says that the nevus was forced down into his foot by tight bandaging of the lower portion of the leg and of the thigh; that until that procedure was resorted to there had not been any involvement of the foot, but that it promptly seemed to swell up and undergo permanent change after a bandage was applied. 2. It occurs to me that this man may have epidermolysis bullosa. He said that any small trauma is followed by a "blood blister," and on his hands and knuckles he exhibits a number of scars of such lesions. It might be wise to ascertain whether there is a mild type of epidermolysis bullosa in addition to the nevus.

CONGENITAL ICHTHYOSIFORM ERYTHRODERMA (CIRCUMSCRIBED TYPE?). Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

CASE 1.—E. di N., a man aged 31, presents a remarkably symmetrical eruption. There is erythema with roughening and pigmentation of the skin of the cheeks and of the bridge of the nose. The skin of the helixes of the ears is gray and thickened. Over the extensor surfaces of both elbows are thickened grayish scaly plaques. The hands and feet are diffusely erythematous and show scarlatiniform scaling. In the riding breeches distribution there is a symmetrical erythema characterized by excessive growth of hair. As in the case of the patient's sister (case 2), the cutaneous changes have been present since birth, and there has been no change in the number or distribution of the lesions. The process is aggravated by cold weather. The erythematous features are greatly exaggerated when the affected portions are dipped in cold water. The thickened brownish skin can be scrubbed off, a tender pink surface being left. There is no history of the occurrence of bullae.

CASE 2.—A. di N., a girl aged 11 years, a sister of E. di N., presents irregular erythematous and grayish or brownish thickened patches symmetrically distributed over the face, the neck and the upper and lower extremities. The hands, feet and ears are erythematous and show a scarlatiniform scaling. The nails, the hair, the mucous membranes and the skin of the trunk appear normal. The eruption presents the characteristics described in case 1.

DISCUSSION

DR. THOMAS BUTTERWORTH, Reading, Pa.: I did not know what to call the condition in these two cases, and yet I had never seen a nevus with a distribution like that exhibited by these patients or congenital ichthyosiform erythroderma which was not generalized. In cases which I observed previously the condition involved the entire body. Both of these patients have an underlying erythroderma. The process is more marked on exposure to cold. Even at this season there is profuse scarlatiniform scaling of the palms and soles. The girl presents a thickened plaque over the elbows which is quite scaly. I do not know how to classify the condition except in the category of congenital ichthyosiform erythroderma of the localized types. I should certainly appreciate a more accurate diagnosis, if one can be made.

DR. FRED D. WEIDMAN: Last week, when I was in Dr. Guy's office, an imbecile child with localized patches of erythema and scaliness was brought in, and Dr. Guy and I were confronted by the same problem as that stated by Dr. Butterworth. Congenital ichthyosiform erythroderma being a disease of the epitrichium, all the ectodermal parts of the surface of the embryo, including the teeth, ought to be abnormal. The teeth in both of these patients, I think, are normal. The redness of the lower extremities exhibited by the girl reminds me strongly, without being quite typical, of the livedo racemosa described as affecting tuberculous subjects. The color can be expressed easily from the red patches of the girl's skin, and my impression is that the condition is not a structural disease of the vascular system, not actually a hemangioma or anything of that sort, but rather a dilatation of various portions, irregularly distributed, of the vascular tree. I cannot see much of that in the man, but he has an extensive hemangioma at the nape of the neck which seems to point in the same direction, namely, to the fact that marked relaxation of the blood vessels is present.

DR. V. C. GARNER: I believe the description given by Weiss and Tobias of the localized type of congenital ichthyosiform erythroderma conforms well to the thickened, erythematous and scaling patches about the knees seen in these patients. In the case of the girl I was not willing to concede the diagnosis, but the condition of the man indicates that the abnormality probably fits into that group as well as into any other.

NAEVUS ANAEMICUS. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

CASE 1.—E. R., a boy aged 15, presents a whitish macular eruption over the left clavicle. Rubbing the area with ice produces an erythema of the intervening skin and accentuates the whiteness of the nevus. The patient was admitted to the institutions at the age of 9 years. He walked at 16 months and talked at 20 months. He had epilepsy when he was admitted, and the seizures have increased in frequency.

The Wassermann test of the blood and examination of the spinal fluid gave negative results. The medical history is irrelevant except for the fact that the patient had acquired syphilis.

CASE 2.—C. B., a girl aged 18, presents a confluent whitish macular eruption in the middle of the back. The surrounding skin becomes erythematous when rubbed with ice, and the white areas are accentuated. The patient, who is feeble-minded, was admitted in 1926. On March 11, 1936, the chronologic age was 17 years and 4 months; the mental age, 5 years and 10 months, and the intelligence quotient, 36.

DISCUSSION

DR. FRED A. WEIDMAN: Is there anything in common in the neurologic or psychiatric state of these two patients?

DR. MCCLELLAN WILSON (by invitation): My co-workers and I thought that a hemangioma segmentally distributed might be present in the central nervous system, but roentgen examinations have failed to demonstrate such a lesion. The mental condition of the two patients is approximately the same. The boy has

epilepsy, and it was believed that surely a hemangioma could be demonstrated somewhere in the central nervous system to explain the pressure phenomenon, but the roentgen findings were entirely negative. Both patients are imbeciles; neurologically they are practically normal from the point of view of neoplasms.

DR. THOMAS BUTTERWORTH, Reading, Pa.: In regard to one of those cases I recall that some months ago I came across a reference which stated that naevus anaemicus may be present instead of adenoma sebaceum in some cases of epiloia. The epileptic patient may have tuberous sclerosis of the brain.

BALANITIS XEROTICA OBLITERANS. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

M. N., a man aged 48, about June 1, 1936, noticed a diminution in the amount and an increase in the projection of the urinary stream. At the same time there was a decrease in the size of the urethral meatus. On September 1 the meatus was pinpoint. There was a whitening of the distal third of the skin of the glans penis which had extended to involve the urinary meatus. In several small areas the whitened skin had a wrinkled or puckered appearance. The whitened skin was possibly a little firmer than the rest of the glans, although the change was not striking. There was a mottled loss of pigment on the mucous surface of the prepuce. There were no preputial adhesions and no urethral discharge. From the middle of August he had been unable to have an erection. At present, as the result of partial amputation, the glans is scarred and deformed. The general character of the whitened skin can be seen, however, on the dorsal surface of the glans as a transverse streak just behind the edge of the scar. Examination of the blood and urine and the Wassermann test of the blood gave normal results. Histologic examination showed moderate hyperkeratosis and an atrophic epidermis. The epidermis was thin, and there was flattening of the rete Malpighii. Beneath this layer was a zone of homogenized connective tissue which was practically acellular and again as thick as the epidermis. The remainder of the cutis was fibrous and showed scattered collections of small round cells. The picture closely resembled that in the cases reported by Madden (*J. A. M. A.* **105**:6 [Aug. 10] 1935).

DISCUSSION

DR. THOMAS BUTTERWORTH, Reading, Pa.: On the dorsal surface, just back of the scar, there is a white streak running across the glans, and that was the color of the distal third of the glans penis. The urethra had been shut down to pinpoint size. There are no subjective symptoms. The only thing that attracted the patient's attention was a difficulty in urinating. The man has never had gonorrhea, and within a day or two after the tip of the penis was removed the urinary stream was full sized and there was no constriction. The stricture was at the meatus.

ATROPHIC SCARS FOLLOWING REPEATED BITING. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

D. S., a man aged 45, exhibits atrophic violaceous scars on the backs of the hands secondary to repeated biting. He is presented as a contrast to the usual biters, in whom hypertrophic changes develop after bites. In periods of agitation the patient, who is nervous and excitable, bites his hands furiously. He was admitted to the institution in 1910.

The Wassermann reaction of the blood was negative.

HYPERTROPHIC SCARS FROM BITING. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

C. S., a man aged 36, presents hypertrophic dense arciform lesions on the hands secondary to biting during periods of agitation. The depressions are due to the individual teeth.

The Wassermann reaction of the blood was negative.

DISCUSSION

DR. ROBERT L. GILMAN: Is this finding common in patients of this type?

DR. MCCLELLAN WILSON (by invitation): Such lesions are commonly observed here, especially in the patients with lower grade mental deficiency and in those extremely excitable and easily tormented and upset. They bite their hands, and one can see the distinct marks of teeth. The finding is not universal, but it occurs in almost 10 per cent of idiotic patients, and why the scars are atrophic in one and hypertrophic in another, I do not know.

DR. FRED D. WEIDMAN: I wish to remark that this form of expression of passion is also found among monkeys in the zoological gardens. When monkeys become excited, one of their favorite acts is to grasp their feet and bite them furiously. As to the reason why some scars are hypertrophic and some atrophic, I think the difference is a matter of degree. Hypertrophic scars result when the pressure is slight and there is no actual puncture of the tissues. Dr. Butterworth included a section from the hand of one of these patients. It shows marked thickening of the epiderm, hyperkeratosis and hyperplasia of the collagenous material. All these changes result from often repeated and comparatively slight pressure. In the case of the man with the more diffuse scars the trauma has been greater and actual lacerations have been produced.

DR. THOMAS BUTTERWORTH, Reading, Pa.: The hypertrophic type is what prevails in this institution. As far as I know, D. S. is the only patient with atrophic scars from biting. The same type of self-injury is observed among the patients at the Wernersville State Hospital. Many of the patients when agitated pick their faces, and twice within the past year I have been called out to observe cases in which I made a diagnosis, substantiated by biopsy, of epithelioma occurring in self-induced ulcerations. Some patients had a half-dozen excoriations on the face; one lesion had a typical pearly border and showed the histologic structure of basal cell epithelioma. Ordinarily these patients pick at the same parts all the time. Some have an ulceration of the ear which persists for months. That is possibly why epithelioma develops whereas in cases of ordinary neurotic excoriations the lesions are made in different places.

DR. FRED D. WEIDMAN: Perhaps the reason why that habit is so prevalent here is imitation. If one subject sees another doing that sort of thing, he imitates him. I recall the report of an "epidemic" of alopecia areata in a British institution. The attending dermatologist felt that the large number of cases observed there pointed to the infectious and transmissible nature of alopecia areata; later it was demonstrated that the alopecia was due to rubbing.

DR. DONALD M. PILLSBURY: I think that this hypertrophic lesion is of some practical importance, because it is not uncommonly seen in small children and infants who have no teeth. Sometimes it is hard to distinguish the lesions from verrucae.

DARIER'S DISEASE. Presented by DR. THOMAS BUTTERWORTH, Reading, Pa.

W. H., a man aged 46, presents numerous greasy brownish crusted papules symmetrically distributed on the face, trunk and extremities. Over the sternum the lesions have coalesced into an infiltrated plaque. Behind the ears are deeply fissured vegetating growths. Over the legs are numerous foul-smelling vegetating crusted ulcers. The scalp is covered with greasy crusts, but there has been no apparent loss of hair. There is a diffuse yellowish horny thickening of the palms and soles. The patient is mentally deficient; he has a psychosis, and no accurate data as to the time or mode of onset could be obtained, but the condition has existed for many months.

The Wassermann reaction of the blood was negative. Examination of the blood revealed 77 per cent hemoglobin, 4,120,000 red cells and 7,200 white cells. The color index was 0.9. The results of the differential cell count were as follows:

polymorphonuclears, 69 per cent; small mononuclears, 24 per cent; eosinophils, 5 per cent; transitional forms, 1 per cent; basophils, 1 per cent. The report of a biopsy stated that microscopically the surface of the specimen was extremely uneven and covered by a thickened stratum corneum. The material concerned was mostly hyperkeratotic, but there were some large accumulations of parakeratosis in the internodular recesses of the surface. The epiderm was only moderately thickened. In relationship to certain corneous masses located like plugs below the epiderm (but still within it) there were numerous smaller and larger intrapapillary cysts lined by but one or two layers of degenerate epithelium. At places, in addition, short solid plugs of such cells extended downward into the corium from the bottoms of the cysts. Within the cysts there were numerous degenerate epithelial cells, many of which were keratinized; some of them constituted the much cited bird's eyes or psorosperms, but the best examples were observed in the relatively vital parts of the epithelium at the "ceiling" of the cyst.

A Case for Diagnosis. Presented by Dr. Thomas Butterworth, Reading, Pa.

J. Z., a man aged 28, presents extensive fissuring and numerous pinhead-sized papules on the dorsum of the tongue. The condition has existed since birth. The patient was admitted to the institution in 1919. On Sept. 19, 1934, the chronologic age was 26 years; the mental age, 7 years and 6 months, and the intelligence quotient, 47. The medical history was irrelevant. The Wassermann reaction of the blood was negative.

DISCUSSION

Dr. Donald M. Pillsbury: I think all the members agree that there is considerable hypertrophy in this case. On looking rather closely along the central sulcus of the tongue I thought that I saw some rather glistening vesicle-like lesions resembling the vesicles seen in lymphangioma, and I wondered whether it would be worth while to make a biopsy with that possibility in mind.

Dr. Carroll S. Wright: I had the same opinion regarding the diagnosis. In a case like this one the diagnosis may not be of great significance. I saw a 3 year old child two years ago, however, with what I thought was lymphangioma of the tongue, and in that case I felt that the diagnosis was of great importance because in many of these cases the growth becomes so large that the tongue protrudes from the mouth. In this case it has apparently not extended at all, and there has been no change in many years. In my case it was a problem to decide what advice to give the parents as to treatment. If one waits too long, one may have a real problem on one's hands. In my case the parents decided against any treatments, and I have heard nothing more.

A Case for Diagnosis. Presented by Dr. Thomas Butterworth, Reading, Pa.

M. F., a woman aged 22, presents symmetrical widely distributed brownish pigment on the trunk, extremities and neck. The patient was admitted to the institution in 1914. She walked at 3 and talked at 6 years. The brownish pigment was present when she was admitted. In 1935 the chronologic age was 20 years and 9 months; the mental age, 3 years and 4 months, and the intelligence quotient, 21. The medical examination showed that the knee jerks were diminished and the station and gait impaired.

No fungi were observed in potassium hydroxide preparations of the scales. The Wassermann reaction of the blood was negative.

DISCUSSION

Dr. Morris Markowitz: The condition looks like a naevus pigmentosus.

Dr. Fred D. Weidman: I agree with that diagnosis. In view of the linear distribution I think it might be worth while to make a roentgen examination of the brain, as has been done in other cases.

LOS ANGELES DERMATOLOGICAL SOCIETY

HARRY P. JACOBSON, M.D., *President*

Oct. 13, 1936

THOMAS W. NISBET, M.D., *Secretary*

EXTRAGENITAL SYPHILITIC CHANCRE. Presented by DR. IRVING R. BANCROFT.

L. N., a man aged 32, engaged in a fist fight about two months ago and struck his opponent in the mouth. His knuckle was abrased by the teeth of his opponent. The wound did not heal but became swollen and appeared to contain pus although no pus was found. One week ago the lesion was still present and a distinct and typical rash of secondary syphilis had developed. A dark field examination showed Spirochaeta pallida.

The patient has received two injections of a bismuth preparation and two injections of arsphenamine. The eruption has practically disappeared.

DISCUSSION

DR. E. D. LOVEJOY: A peculiar thing about primary lesions occurring in abrasions made by a human bite is the fact that the infection is limited to one abrasion. Others are immune, regardless of how closely located they may be.

POIKILODERMA ATROPHICANS VASCULARE OF THE JACOBI TYPE COMPLICATED BY CANCER OF THE THIGH. Presented by DR. H. C. L. LINDSAY.

G. McG., an Irish-American man aged 58, is a boatman. His family history is unimportant. He had smallpox twelve years ago and typhoid when he was 18 years of age. For the past twenty years he has had a generalized slightly scaling eruption, and in 1930 he had an ulcer about 6 cm. in diameter on the medial surface of the upper portion of the left arm. The generalized eruption began on the inner and anterior surface of the left thigh and spread gradually over the thighs, arms, body, legs and forearms; later it involved the face. The pubic hair disappeared, and an eruption of the appearance of a roentgen ray dermatitis with atrophy and some soft tumors developed. During the past year a nodule broke down on the left thigh; this has assumed the appearance of a carcinoma and measures 10 cm. in diameter.

The skin is mottled by various tints ranging from hyperpigmentation to depigmentation and telangiectasia. An area of particularly marked wrinkling is present over the left breast. Some atrophy is apparent over the muscles of the left shoulder. The patient complains of moderate itching and of burning. Wassermann tests of the blood have repeatedly given negative results. The urine is normal. A differential blood cell count showed 51 per cent polymorphonuclears, 35 per cent small lymphocytes, 3 per cent large lymphocytes, 7 per cent transitionals and 5 per cent eosinophils.

The results of a biopsy made in 1930 were reported by Dr. Taussig and Connot as follows: Sections of material from the thigh showed a sharply limited layer just beneath the epidermis, apparently separating this structure from the corium. This layer consisted of growing mesenchymal tissue made up for the most part of endothelial cells forming capillaries and fibroblasts. Some capillaries contained blood. This newly formed structure had the appearance of embryonal mesenchyme and was not characteristic of granulation tissue or of true tumor tissue. The epidermis was flattened, obliterating the rete pegs and consisting of from eight to ten somewhat compressed cells. Vacuolation of cells occurred here and there in the epidermis. The basal layer was destroyed, and in some places the fibroblasts of the newly formed layer and the epithelial cells were so intermingled that they could not be differentiated. In the infiltrating layer there were no sweat glands, sebaceous glands or hair follicles. There were also some endothelial new growth in this region and an endothelial proliferation between fat cells.

DISCUSSION

DR. H. C. L. LINDSAY: I reviewed the literature to find whether any therapeutic measures were of value. Treatment with adrenal extract was mentioned favorably. This patient has not shown marked muscular atrophy, but at one time he did have some muscular weakness.

DR. WILLIAM H. GOECKERMAN: I do not agree with the diagnosis of poikiloderma of Jacobi. The patient has an idiopathic atrophy. This opinion is based on a morphologic, not on a genetic, conception. There is evidently a superimposed carcinoma.

ACQUIRED EPIDERMOLYSIS BULLOSA. Presented by DR. STANLEY CHAMBERS, DR. NELSON PAUL ANDERSON and DR. M. W. ROSENBERG.

This man, aged 49, single, a chef, was born in Illinois of Irish-German descent. He has lived in San Francisco for the past fifteen years. His health had always been good before the onset of the present cutaneous disease. The family history is irrelevant.

The present cutaneous disease started about four years ago. It first appeared on the toes and soles as bullae which were apparently produced by trauma and friction from standing or walking. All the toe-nails fell out at this time, and they have only partially regrown since. The following year similar lesions appeared on the fingers, on the hands, on the wrists, on the elbows, on the neck and on the scalp. The condition has shown little response to therapy, and new bullae appear every few days. At present, in addition to the aforementioned sites, the ankles, the knees and the face are involved. There is a moderate itching and burning sensation because of which the patient usually rubs or scratches, and within from one-half to two hours a bulla appears in the traumatized area.

Lesions have occurred in the mouth; however, none is present there now. The involved areas show erythema, pigmentation, superficial scarring and occasional bullae measuring from 5 to 15 mm. in diameter. The bullae are filled with a clear straw-colored serous fluid. There are numerous small white superficial milia-like deposits in the skin; these are especially noticeable on the hands. There are moderate atrophy of the skin of the hands and feet, almost total loss of the toe-nails and partial loss and dystrophy of the finger-nails. New bullae can be produced by friction in erythematous areas which were previously involved, but no bullae have been produced in apparently normal areas.

The Wassermann and the Kahn reaction of the blood were negative. Urinalysis gave normal results.

Histologic examination of a section of skin stained with hematoxylin and eosin showed a marked inflammatory reaction in the cutis and edema and collections of serous exudate in the derma, chiefly between the derma and the epidermis, and in some places within the layers of the epidermis. The cellular infiltrate consisted chiefly of lymphocytes, polymorphonuclear leukocytes, plasma cells and a few eosinophils. In sections stained with Weigert's elastic tissue stain there was a moderate diminution in the elastic tissue fibers in the papillary layer.

The clinical and histologic features made the differentiation between pemphigus and epidermolysis bullosa borderline. A Pels-Macht test has not been made, but the clinical features of the case seem to justify a diagnosis of the acquired type of epidermolysis bullosa.

DISCUSSION

DR. WILLIAM H. GOECKERMAN: I do not think that the disease is pemphigus, even if there are pronounced changes in the skin. I make a definite distinction between pemphigus and acquired epidermolysis bullosa. The former always runs a vicious course.

DR. SAMUEL AYRES JR: I think that the clinical picture is that of epidermolysis bullosa, but there are one or two peculiar features. On the ankles are several lesions which clinically give an impression of psoriasis, being red and scaly. On

the soles are what appeared to be dried vesicles of a recalcitrant pustular eruption, or possibly a pustular type of psoriasis. The patient may have different types of cutaneous lesions caused by some underlying toxic factor of as yet undetermined origin. The milia were referred to in the presentation, but the dried vesicles to which I refer were particularly noticeable over the heels.

DR. KENDAL P. FROST: I agree with the diagnosis.

COLLOID DEGENERATION OF THE SKIN (HYALOMA). Presented by DR. STANLEY CHAMBERS, DR. NELSON PAUL ANDERSON and DR. M. W. ROSENBERG.

This man, aged 56, is a gas station attendant, whose out-of-doors work involves excessive exposure to the rays of the sun. His general health has always been good, except for the fact that he had dysentery in 1904, while he was in the Philippine Islands. He has used very little alcohol or tobacco. The present cutaneous lesions first appeared on the dorsal surfaces of the hands about two and one-half years ago as small pseudovesicles. The vesicles never ruptured, but more continued to appear until the dorsal surfaces of the hands were covered with these lesions. During the past year similar lesions have appeared on the dorsal portion of the neck. The condition has been asymptomatic and progressive and there has been no tendency toward healing.

There are numerous pseudovesicles from 1 to 5 mm. in diameter distributed over the dorsal portion of the neck and the backs of both hands. Many lesions have coalesced to form larger plaques which retain the characteristics of the elementary lesions. When these are opened, a gelatinous, colloid material is expressed and there is an accompanying hemorrhage from the base.

Sections of skin stained with hematoxylin and eosin showed masses of a homogeneous colloid-like material which took the eosin stain. These were situated beneath the epidermis, and a thin shell of connective tissue was observed between the colloid masses and the basal layer of the epidermis. The epithelium over these masses was moderately thinned. Within the colloid blocks were seen a few cellular nuclei and remaining fragments of connective tissue fibers. Connective tissue stains showed a degeneration of the collagen and elastic tissue fibers in the surrounding zones.

BRONX DERMATOLOGICAL SOCIETY

PAUL GROSS, M.D., *President*

Oct. 22, 1936

HENRY SILVER, M.D., *Secretary*

LICHENOID AMYLOIDOSIS OF THE SKIN. Presented by DR. G. D. ASTRACHAN and DR. VAN ALSTYNE H. CORNELL.

P. C., a man aged 39, born in Cuba, presented himself at the outpatient department of the Metropolitan Hospital (service of Dr. F. Dearborn) in August 1936 because of an eruption of thirty years' duration. It first appeared on the lower aspect of the legs and gradually spread upward, involving the leg up to about 3 inches (7.5 cm.) below the knee. About two and one-half years ago lesions appeared on the lower part of the back, and nine months ago a few lesions were noticed on the left arm. The patient is apparently in good health except for occasional spells of dizziness. He states that as far as he knows he does not have a venereal disease or tuberculosis. He claims that his mother and two sisters, who live in Cuba, have a similar eruption.

Over the whole circumference of both legs, but mainly over the anterior and posterior aspects, there is an eruption composed of numerous closely aggregated

lesions. Most of them are flat and well defined, slightly elevated, hard and somewhat shiny; they vary in size from that of a pinpoint to that of a pinhead. The color of the involved area is light brown on the periphery and dark brown to almost blue in the center. On the lower part of the back the lesions are grayish or brown, well defined and elevated and range in size from that of a pinhead to that of a psyllium seed; they show a tendency to coalesce and to form small plaques. On the lateral aspect of the left forearm there are a few scattered flat and conical skin-colored and light brown lesions the size of a pinpoint. The patient complains of intense itching. The lesions stand up and become darker after they are washed with water.

Examination of the urine, the Wassermann test of the blood and examination of the spinal fluid gave negative results. Examination of the blood showed 97 per cent hemoglobin, 5,180,000 erythrocytes, and 4,500 leukocytes.

Histologic sections stained with hematoxylin and eosin were studied by Dr. D. L. Satenstein. In the upper portion of the cutis and in the subepidermal area there were small more or less homogeneous zones which took on a lilac color. Aside from a few moderately dilated blood vessels and a sparse cellular infiltrate, the cutis showed no changes.

The epidermis was composed of thin interlacing and anastomosing bands and strands. The basal cell margin was intact and contained a considerable amount of pigment. The surface was irregular and covered by a sparse, loosely laminated horny layer.

A section stained with methyl violet presented the same picture except that the small subepidermic homogeneous areas took the characteristic red stain.

DISCUSSION

DR. DAVID L. SATENSTEIN: I believe that this disease is not rare. As a rule, cases of it are missed. They are presented with various diagnoses, such as that of Vidal's disease or of some other type of lichen. Since attention was called to this entity about two or three years ago an increasing number of cases have been observed. Clinically the diagnosis is not easily made. However, once the disease is thought of the diagnosis becomes relatively simple. If one injects a solution of from 1 to 1.5 per cent of congo red underneath the lesion the tissue takes up the color in a few hours or in a few days. Microscopically the disease is easily identified with the congo red stain or other suitable stains.

In this case the manifestations are somewhat unusual because of the pigmentation of the lesions. This may be due to mechanical irritation. I believe that this is the fifth case of the disease recorded. The disease is not easily influenced by therapy. In the cases I have observed the condition has remained unchanged for two or three years.

DR. ISIDORE M. LASHINSKY: This case did not impress me clinically as one of amyloidosis cutis lichenoides. Recently I had occasion to observe a case of localized amyloidosis which was reported by Drs. O. S. Philpott and A. W. Freshman (ARCH. DERMAT. & SYPH. **33**:970 [June] 1936) and was later presented by Dr. Howard Fox before the New York Dermatological Society (ARCH. DERMAT. & SYPH. **34**:506 [Sept.] 1936). The only similar features in these two cases are the symmetry of the distribution and the presence of pruritus. The lesions in Dr. Fox' case were somewhat larger, some being the size of a split pea; they were waxy, translucent and more sparsely distributed. The diagnosis was confirmed by biopsy and local injection of congo red.

In the case under consideration the presenters failed to state whether generalized amyloidosis was present. This was not present in the case which I cited. I still have the impression that this case at least clinically suggests lichen ocreaformis. However, I shall have to accept Dr. Satenstein's histologic diagnosis of amyloidosis cutis.

DR. CHARLES A. GREENHOUSE: Dr. Lashinsky mentioned that the condition in this case simulates that of lichen planus ocreaformis. I presented a case of that

disease at a previous meeting (ARCH. DERMAT. & SYPH. **32**:513 [Sept.] 1935), and I cannot agree with Dr. Lashinsky. The lesions in my case covered both legs from the knees to the ankles and were lentil-sized purplish red papules, whereas in the case presented this evening they are follicular and hyperpigmented. In my case injections of congo red gave absolutely negative results. The manifestations of lichen planus ocreaformis simulate those of neurodermatitis.

DR. G. D. ASTRACHAN: In reference to Dr. Lashinsky's question about the possibility of systemic amyloidosis in this patient I wish to say that we intend to investigate this possibility in spite of the fact that the skin is rarely involved in cases of generalized amyloidosis. It is also of interest to call attention to the fact that the lesions are different in color, size and shape and developed at different periods, some being of nine months', some of two and one-half years' and some of thirty years' duration.

DR. VAN ALSTYNE H. CORNELL: It must be admitted that there is a general resemblance to lichen chronicus simplex, as for instance in the patches on the arm. The translucence of the lesions so typical of this disease is absent, but this may be due to the dark skin of this man and to the fact that the epidermis may not be thin enough to show the amyloidosis underneath. The other typical symptoms, such as the location of the lesions and the histologic features, are present.

REINFECTION IN A PATIENT TREATED WITH NEOARSPHENAMINE BY THE INTRAVENOUS DRIP METHOD. Presented by DR. LOUIS CHARGIN.

This man, aged 39, presented himself on June 3, 1933, exhibiting a meatal lesion of seventeen days' duration in which spirochetes were found. There was the usual history of exposure. The Wassermann reaction of the blood was 4 plus. The patient had a generalized papular eruption.

On June 8, 1933, he was admitted to the Mount Sinai Hospital, where he received neoarsphenamine by the intravenous drip method. He received 0.5 Gm. of neoarsphenamine on the first day, 1 Gm. on the second day, 1 Gm. on the third day and 1 Gm. on the fourth day, or a total of 3.5 Gm. in a period of four days. He was discharged from the hospital and was observed in the outpatient department.

On July 14 the Wassermann reaction of the blood was 4 plus; on July 22 it was 3 plus and on August 3 it was doubtful. On August 10, on September 19 and on October 3 it was negative. Between Oct. 24, 1933, and Feb. 24, 1934, twelve injections of bismuth subsalicylate were administered. On April 3 and on Oct. 11, 1934, the Wassermann reaction of the blood was negative. On Oct. 28, 1934, the examination of the spinal fluid gave negative results in every respect.

The patient then disappeared from observation. He returned on Sept. 5, 1935, after an absence of almost two years. At this time he presented a sore in the sulcus of the penis. The first sore, as stated, was located in the meatus. The patient admitted that he had been sexually exposed on repeated occasions. Dark field examination showed numerous spirochetes on two occasions. The Wassermann reaction of the blood at this time was negative. On Sept. 11, and on Sept. 24, 1936, the Wassermann reaction of the blood was 4 plus. On October 8 there was a papular eruption on the trunk. The eruption is still present, the sore in the sulcus is healing and the adenopathy is generalized.

DISCUSSION

DR. LEO SPIEGEL: I believe that this patient had a reinfection because most of the criteria formulated by Stokes and his co-workers are present. However, in some respects the case fails to comply with the accepted criteria, especially in regard to the amount of arsenic administered, but the method of treatment employed with the object of early and immediate sterilization accounts for this. The fact that the man was not observed for a period of two years is another important factor to be considered.

DR. FRANK E. CROSS: Dr. Chargin's method of treatment is of course different from the orthodox method. It is the massing of the drug in a short space of time that is the important feature. The fact that the patient presents himself with a reinfection seems to speak well for the therapy employed.

DR. MARION B. SULZBERGER: I do not think there is any doubt that this is a case of reinfection; and the fact that this man has been reinfected surely does not speak against the efficacy of the treatment employed. However, one must remember that even with other methods of treatment and even with apparently small doses of antisyphilitic medication early syphilis is sometimes cured, the patients being susceptible to reinfection Also, a cure may occur spontaneously. However, I am firmly convinced that Dr. Chargin's method of treatment will probably prove to be better than any used at present in most cases of early syphilis. It has a sound theoretical basis. For it is known that in administering a medicament one must consider not only the total dosage but the period of time in which this total dosage is administered. Dr. Chargin and Dr. Harold Hyman have in a short space of time been able to administer comparatively massive doses of arsphenamine. This is an approach to a therapia sterilisans magna. A further theoretical consideration is based on the prevention of sensitization by readministration of the allergen during the incubation period of the sensitization (ARCH. DERMAT. & SYPH. **20**:669 [Nov.] 1929). The opinion prevails today that many of the untoward effects of drugs such as arsphenamine are based on the production of a specific hypersensitivity.

DR. LOUIS CHARGIN: The discussion brought up the important point, namely, that the massing of the drug in a short space of time is fundamental in the intravenous drip method of arsphenamine therapy (*J. A. M. A.* **104**:878 [March 16] 1935). From a theoretical standpoint, it approaches Ehrlich's conception of therapia sterilisans magna. This case of reinfection demonstrates well the efficacy of the intravenous drip method of arsphenamine therapy.

ANETODERMA OF SCHWENINGER AND BUZZI (?) ASSOCIATED WITH GENERALIZED NEURODERMATITIS. Presented by DR. ADOLPH ROSTENBERG.

This woman, aged 45, has an irrelevant family history. She is undersized, being about 4 feet and 9 inches (1.44 meters) in height and weighing 82 pounds (37.2 Kg.). Menstruation began when she was 14 and stopped when she was 33; the menstrual cycles were irregular. The patient is of nervous temperament, complains continually of chilliness and excessive sweating and gives the impression of being of a hypopituitary type. The distribution of hair is irregular; the pubic and axillary regions are almost free from hair. The neurodermatitis began fifteen years ago, after typhoid fever. The eruption spread over the entire body. The itching is severe.

The skin is reddened, infiltrated and lichenified and shows numerous scratch marks. On the back and on the scapular regions there are a dozen or more grayish globular elevations, varying in size from that of a lentil to that of a pea. These lesions are soft, easily compressed and show herniation. Physical examination including roentgen examination of the chest as well as examination of the blood and urine gave negative results.

NOTE.—The biopsy report subsequently submitted by Dr. W. Sachs stated that the specimen showed changes characteristic of Recklinghausen's disease.

DISCUSSION

DR. LOUIS CHARGIN: The clinical picture is somewhat complicated. Aside from the long-standing generalized neurodermatitis the patient exhibits herniated lesions which may justify the diagnosis of anetoderma of Schweninger and Buzzi. But careful examination shows numerous pigmentations as well as soft fibromatous lesions which would seem to indicate that the condition is Recklinghausen's disease.

DR. DAVID L. SATENSTEIN: I agree with Dr. Chargin's remarks. The manifestations present point to Recklinghausen's disease. The question of differential diagnosis can be easily settled by histologic examination.

DR. HENRY SILVER: Anetoderma of Schweninger and Buzzi has been fully discussed by Dr. Chargin and me in our studies on macular atrophy (Chargin, L., and Silver, H.: Macular Atrophy of the Skin, ARCH. DERMAT. & SYPH. **24**:614-643 [Oct.] 1931; Silver, H., and Chargin, L.: Syphilis and Macular Atrophy, *Urol. & Cutan. Rev.* **37**:395-402 [June] 1933). I thought we succeeded in clarifying the somewhat complex problem. Dr. Rostenberg's case is another example of the difficulty occasionally encountered in interpreting these manifestations, probably because they are not seen often enough. Frequently the condition described by Schweninger and Buzzi is not regarded as a variety of macular atrophy. This entity appears under the name of multiple benign tumor-like new growths of the skin, and it need not be pointed out now that the condition has nothing to do with tumors, benign or other. Anetoderma of Schweninger and Buzzi is a type of primary macular atrophy. As Dr. Satenstein stated, it is not difficult to establish the diagnosis microscopically, because of the characteristic changes in the elastic tissue. Cases of this condition are reported now and then in the literature, and in discussions of these cases one finds that the misconception which prevailed thirty years ago still exists. The condition is frequently confused with Recklinghausen's disease, mainly because of the ballooned herniated lesions.

With regard to Dr. Rostenberg's case I feel that the presence of ballooned lesions does not warrant the diagnosis of anetoderma of Schweninger and Buzzi. There are other features in this case, such as typical fibromas and pigmentations, which favor the diagnosis of Recklinghausen's disease.

DR. ADOLPH ROSTENBERG: The reason for presenting this patient was not only because anetoderma of Schweninger and Buzzi is a rare dermatosis but because of its association with neurodermatitis. The latter has been present for the last fifteen years, but the anetoderma developed only about one year ago. I cannot accept the diagnosis of Recklinghausen's disease because the condition appeared only recently and it is rather unusual for Recklinghausen's disease to appear so late in life. I have seen these ballooned lesions flatten out and disappear; this does not occur in Recklinghausen's disease. The pigmentation and freckling are probably due to the fact that this woman was treated for years with ultraviolet rays.

MELANOCARCINOMA WITH METASTASES. Presented by DR. HENRY SILVER and DR. CHARLES WOLF.

L. S., a salesman aged 30, whose family history disclosed no evidence of malignant disease, was, except from hypertension, apparently in good health.

On about May 1934 his family physician excised a raised brown mole which had been present for some time on the left side of the back. One and one-half years later a similar brown mole appeared on the left shoulder and was also excised. Six months later there was a recurrence of the lesion on the left shoulder.

On May 26, 1936, the patient came to the office of one of us (H. S.) presenting an indurated raised bluish mass with satellite nodules surmounting a vertical scar on the left shoulder near the posterior axillary fold. Small hard palpable glands were present in the left axilla. An atrophic fairly large linear scar was seen on the left side of the back. In the area of the left nipple there was a pigmented mole which had been present for the last five years.

The patient was referred to the Mount Sinai Hospital. A biopsy of material from the lesion on the left shoulder revealed a nonpigmented melanocarcinoma. The Wassermann reaction of the blood was negative. The urine showed no melanin. Examination of the blood revealed 11,350 white cells and 93 per cent hemoglobin. The differential blood cell count was normal. The systolic blood pressure was 160, and the diastolic pressure, 88. A roentgenogram of the chest showed no abnormalities.

Between June 10 and July 29, 1936, forty roentgen treatments consisting of 6,000 roentgens of high voltage radiation filtered with 0.5 mm. of copper was given to the mass in the left posterior axillary fold. Marked radio-epidermitis of grade 2 developed. At the end of the treatment the mass was slightly smaller.

On July 13, 1936, a pea-sized nodule was discovered below the left scapula. Between July 15 and Aug. 19, 1936, thirty treatments consisting of 6,000 roentgens of low voltage radiation (100 kilovolts) filtered with 3 mm. of aluminum were given to this lesion. The mass became slightly softer and smaller, but again a marked radio-epidermitis of grade 2 developed. At present there is little change in the lesions.

DISCUSSION

DR. DAVID L. SATENSTEIN: The condition is an example of nevocarcinoma which developed on the basis of a mole. One must bear in mind the three types of mole: 1. That which develops in the epidermis proper and in which there is a proliferation of either basal or prickle cells and no abnormality in the cutis. This type is often associated with a good deal of pigmentation. 2. That which develops in the cutis proper, sometimes extending to the deep layers of the cutis. 3. That which develops on the margin of the epidermis. General pathologist often refers to this type as endothelioma. There is no reason why pigmentation may or may not develop in those moles. I have seen some in which pigmentation was present from the start and others in which there was no pigmentation whatever. Nevocarcinoma is not always fatal, although numerous lesions may continue to develop.

DR. CHARLES WOLF: So far no metastases have been discovered in any of the internal organs. The patient received a tremendous amount of roentgen therapy. It is too early to foretell how much of that mass is going to regress further. Although the condition is apparently hopeless, therapy should be employed even if only as a palliative measure.

DR. HENRY SILVER: In view of the rapid development of a new lesion which occurred while the patient was receiving large doses of roentgen treatment and in view of the apparent lack of response of the treated mass, I feel that the outlook is hopeless.

INFLAMMATORY EDEMA (STEVENS). Presented by DR. PAUL GROSS for DR. JULIUS RAAB.

J. De F., a woman aged 45, born in Italy, has resided in the United States for the past sixteen years. She was first seen at the clinic for cutaneous diseases of the Hospital for Joint Diseases in January 1929. At that time she presented edema of both legs with a superimposed dermatitis. About two years previously she first noticed swelling of the legs, but there was no pain or redness. She then disappeared from observation.

On April 1936 she appeared again. She stated that during the last few years the swelling of the legs had become gradually worse. In the past eight months she had been treated at another hospital and had received injections for varicosities.

Both legs are enlarged; the right leg is almost twice the size of the left. The legs have a lobulated appearance; the lobules are separated by deep sulci. The skin is indurated and glossy and shows a definite bluish discoloration. Crusts cover the lower half of the right leg, while the lobulated part of the right thigh shows at close inspection a number of localized tumor-like lesions of a varying consistency, some being hard and some soft and elastic. These lesions give the impression of a solid edema. Somewhat higher on the thigh the lesions have a more nodular surface, and on the inner aspect of the thigh there is a patch of lichenification the size of a palm. There is a papillomatous growth on the lower third of the right leg.

Urinalysis and the Wassermann and Kahn tests of the blood gave negative results. The basal metabolic rate was + 24 per cent.

The sections showed marked edema of the skin. There were many dilated vascular channels throughout the corium; some of them were thin walled and devoid of erythrocytes, resembling lymphatics. There was a focal perivascular infiltration with dark-staining macrophages, some of which contained brownish iron pigment. A special request for differential staining for mucin was made, but unfortunately it has not been carried out. The histologic diagnosis was inflammatory edema, probably due to chronic lymphangitis with obstruction.

The so-called "sponge heart" treatment was applied every other day, with gratifying results. A sponge large enough to cover the circumference of the leg was applied to the lymphedematous area and a similar sponge was applied to the thigh, care being taken to prevent overlapping. The sponges were kept in place by a tight gauze bandage over which an ace bandage was placed. The dressings were changed every other day and the size of the sponges reduced with the retrogression of the lymphedema. The subjective symptoms of pain and burning sensation, which at times disabled the patient, totally disappeared. Lately the patient has been quite active. The size of the legs has diminished considerably. The patient is still receiving treatment.

The size of the legs and the reduction after treatment are given in the tabulation.

	Calf of the Leg		Above the Knee		Middle of the Thigh	
Date	Right	Left	Right	Left	Right	Left
May 28, 1936	21 inches (53.3 cm.)	19 inches (48.3 cm.)	26½ inches (67.2 cm.)	22½ inches (57.1 cm.)	30 inches (76.2 cm.)	28 inches (71.1 cm.)
June 12, 1936	18 inches (45.7 cm.)	17½ inches (44.4 cm.)	23 inches (88.9 cm.)	20 inches (50.8 cm.)	27½ inches (69.8 cm.)	26½ inches (67.2 cm.)
Sept. 1, 1936	17¾ inches (45.1 cm.)	17¾ inches (45.1 cm.)	23 inches (88.9 cm.)	20½ inches (52.1 cm.)	27½ inches (69.8 cm.)	25½ inches (64.8 cm.)
Oct. 10, 1936	17½ inches (44.4 cm.)	17½ inches (44.4 cm.)	23 inches (88.9 cm.)	20½ inches (52.1 cm.)	27½ inches (69.8 cm.)	25½ inches (64.8 cm.)

DISCUSSION

DR. MARION B. SULZBERGER: I consider elephantiasis or chronic lymphedema of the lower limbs an interesting subject. It may occur as an end-stage in many different types of conditions. One possibility to consider in this case is lymphogranuloma venereum. I think that in all cases of this condition a Frei test should be made. Williams, Traub and I have recently worked on the problem of recurring erysipelas-like lesions of the lower portion of the legs, and in some cases we found an alteration in the response of the skin to trichophytin—a wheal reaction being elicited. In two cases local treatment of the tinea of the feet and in one case injections of trichophytin stopped the regular recurrences of the swellings. I was able to demonstrate Prausnitz-Küstner reagins in the blood serum of two of the patients. It would, therefore, seem pertinent to test the skin of this patient with trichophytin and to determine whether she exhibits an urticarial cutaneous reaction and whether she has Prausnitz-Küstner antibodies.

DR. FRANK E. CROSS: It appears to me that the diagnosis is being unnecessarily complicated. My impression is that the condition is elephantiasis.

DR. JULIUS RAAB (by invitation): My co-workers and I have obtained good results with the treatment advocated. The patient has been treated for the past five months, and whereas she was previously totally disabled and suffered a great deal of pain, she is now able to walk and is relieved of much of the pain. The swelling has been considerably reduced.

ERUPTION RESEMBLING PITYRIASIS RUBRA PILARIS TREATED WITH INJECTIONS OF LIVER EXTRACT. Presented by DR. PAUL GROSS.

This patient was presented before this society at the meeting of April 1936 (ARCH. DERMAT. & SYPH. **35:** 542 [March] 1937) with the diagnosis of pityriasis rubra pilaris with psoriasis.

From May 15 to June 22 she received injections of liver extract, and after that treatment all the lesions, except some on the scalp, cleared up. One area in the lumbar region was treated with roentgen rays but did not show any more rapid involution than the other lesions.

At present there are circumscribed erythematous patches covered with rather adherent whitish scales on the scalp. These lesions look like psoriasis except for the presence of keratotic plugs around the hair follicles.

DISCUSSION

DR. PAUL GROSS: This case is presented to show the effect of treatment with liver extract. The eruption on the trunk has cleared up entirely, and only a few lesions remain on the scalp. The patient received 3 cc. of concentrated liver extract intramuscularly twice a week for about six weeks.

DR. HELEN CURTH (by invitation): It is of interest to mention that the daughter of this patient is suffering from a well developed generalized psoriasis.

DR. PAUL GROSS: When I presented this case for Dr. Curth I did not favor the diagnosis of pityriasis rubra pilaris, partly because the eruption on the trunk had been present only about three months. I wish Dr. Machacek would explain the histologic changes.

DR. G. F. MACHACEK (by invitation): There is really little to say about the histologic picture of the two types of lesions. One impressed me as psoriasis or at least a psoriasiform condition and the other as a follicular keratosis, which is considered as the change seen in pityriasis rubra pilaris of Devergie.

DR. SAMUEL FELDMAN: The patient presents patches of alopecia with reddening of the scalp, and I believe that further observation will show definite atrophy. There is one patch on the scalp which because of scaliness and redness around it gives the impression of lupus erythematosus. I do not think it is lupus erythematosus. The lesions on the body and those on the scalp resemble those of lichen atrophicus. I have mentioned on several occasions that the latter is not as rare as is usually believed.

DR. ARTHUR SAYER: Did Dr. Gross have further experience with liver extract in cases of similar conditions? Were the results favorable?

DR. PAUL GROSS: I instituted liver therapy in this case partly because of my general interest in that kind of therapy and partly because of the recent favorable reports on liver therapy in cases of follicular keratoses and vitamin deficiency.

LICHEN PLANUS ANNULARIS AND SMOOTH ATROPHY OF THE TONGUE. Presented by DR. ARTHUR SAYER.

B. M., a woman aged 63, born in Russia, was first seen in January 1934, at which time the lesion of the tongue was diagnosed as syphilitic glossitis with ulcerations on the lateral borders and leukoplakia on the dorsum of the tongue. At that time she had no eruption on the body. The Wassermann reaction of the blood was reported to be 2 plus at another clinic in January 1930. Because of the ulcerations on the lateral borders possible malignant degeneration had to be seriously considered, and a small piece of tissue was removed from this area of the tongue for histologic study. The pathologist reported having observed dense infiltration of round cells, some of which were packed like lymph nodes, and a large amount of plasma cells.

The patient has been treated regularly at the clinic of the Mount Sinai Hospital for the past three years. She received two courses of intramuscular injections of bismuth subsalicylate, a total of thirty-five injections being given. The Wassermann reaction of the blood was reported to be negative on several occasions. The grayish eruption on the tongue has not improved during this time, but the ulcerations on the borders have healed and broken down again several times. They have remained healed for the past few months. The repeated breaking down of the lesions on the borders of the tongue may be attributed to the dentures.

Examination of the blood in 1934 showed 98 per cent hemoglobin, 5,700,000 red cells and 10,200 white cells. There were 55 per cent polymorphonuclears, 36 per cent lymphocytes, 6 per cent monocytes, 1 per cent eosinophils and 2 per cent basophils. Urinalysis showed a faint trace of albumin, no sugar and a few white blood cells.

During the past two weeks there developed on the trunk and extremities an acute eruption consisting of many annular lesions and numerous violaceous small plaques consisting of typical flat-topped shiny papules. The eruption is moderately pruritic.

The tongue at present shows an eruption which covers the entire dorsum and forms a grayish lattice pattern with a diffuse grayish background. There is a similar but less diffuse grayish eruption on the lips and buccal mucosae. The papillae on the dorsum of the tongue are absent.

DISCUSSION

DR. ARTHUR SAYER: This patient was presented before this society two years ago. At that time the diagnosis suggested was atrophic glossitis on a syphilitic basis associated with leukoplakia. There were no other clinical evidences of syphilis. The Wassermann reaction of the blood in 1930 was reported to be 2 plus. The test was made at another clinic.

Two weeks ago a typical eruption of lichen planus developed. I do not think that any one will question the diagnosis of lichen planus on the body, but the diagnosis of leukoplakia of the tongue merits added consideration. There was always doubt in my mind as to the diagnosis of leukoplakia. I observed that the lesions on the tongue were not of uniform and even appearance, as is common in leukoplakia. The grayish coating on the tongue had a mottled and reticulated appearance over a fainter grayish background. Another interesting fact is that a biopsy of material from the lesions of the tongue about six years ago showed an infiltration of round cells in dense sharply defined groups which looked almost like lymph nodes. It is known that the characteristic microscopic appearance of lichen planus is this dense clumping of round cells. Therefore in retrospect it can be said that this biopsy of material from the tongue showed the picture of lichen planus, but the picture was not interpreted as such at that time.

I think that the condition is interesting because the clue to the correct diagnosis of the lesions of the tongue has finally been furnished after a period of about six years.

DR. VAN ALSTYNE H. CORNELL: How much arsenic did the patient receive?

DR. ARTHUR SAYER: The patient did not receive any arsenic medication.

DR. CHARLES WOLF: I think Dr. Sayer's review of the case is enlightening. However, the facts do not eliminate the probability that the patient has an interstitial glossitis on a syphilitic basis. The appearance of the new eruption of lichen planus on the body can be explained. A lichenoid eruption or even typical lichen planus can be caused by a drug, and furthermore a patient with syphilis can have lichen planus.

DR. CLINTON H. MARTIN: I cannot see typical manifestations of syphilis of the tongue. I am much more inclined to regard the lesions as lichen planus. Other points against the diagnosis of syphilis are that the Wassermann reaction is 2 plus and that clinical evidence of syphilis is lacking.

DR. FRANK E. CROSS: I think that a 2 plus Wassermann reaction in a person with glossitis and leukoplakia is strongly suggestive of syphilis. On the other hand a 2 plus Wassermann reaction alone merely suggests syphilis. Lichen planus limited to the tongue is, of course, observed. In a number of cases eruptions on the body develop later, as occurred in this case.

DR. LOUIS CHARGIN: There is no question as to the lichen planus of the body. However, I have never seen such marked atrophy of the tongue produced by lichen planus, although leukoplakia-like eruptions are seen often enough. It is more likely that the condition of the tongue is due to a drug.

ERYTHROPLASIA OF QUEYRAT. Presented by DR. THEODORE ROSENTHAL.

G. L., a man aged 62, born in Spain, has been in the United States for twenty-eight years. He states that his father died of cancer (?) of the face. In 1931 he presented himself, exhibiting an eroded papule on the glans penis. Dark field examination failed to show Spirochaeta pallida. The Wassermann and the Kahn reaction of the blood were negative. There was no inguinal adenopathy.

The patient disappeared from observation until September 1936. At present there are two sharply circumscribed red elevated plaques; the smaller, which is about 0.5 cm. in diameter was excised for histologic examination. The larger, which is irregular and measures about 1 by 1.5 cm. in diameter, involves the glans, the sulcus and the adjacent ventral aspect of the inner surface of the prepuce. The lesions are firm and moist and do not give rise to any subjective symptoms. There is no inguinal adenopathy. The Wassermann and the Kahn reaction of the blood are still negative.

The patient estimates the total duration of these lesions to be between six and seven years; the rate of growth is slow.

The sections of the mucous membrane of the prepuce, studied by Dr. Gerald F. Machacek, showed some striking changes. The mucous membrane at one end was slightly hypertrophied; at the other end there was a marked acanthosis. There were marked intracellular and extracellular edema, and a moderate leukocytic infiltration. Over these two areas there was definite evidence of keratosis. The intervening zone contrasted sharply with the two end zones.

There was no evidence of a keratin layer. Many polymorphonuclear leukocytes were observed, but the most striking feature was the peculiar proliferation to a relatively even depth of epithelial cells which had large nuclei and were basophilic. A few mitotic figures were noted. A few hydropic cells were present, and though the buds were well defined their appearance somewhat resembled that of basal cell epithelioma. At the edges they contrasted sharply with the large polygonal more eosinophilic squamous cells. It was also at this junction of normal and abnormal epithelium that the mitotic figures were most conspicuous and most numerous. The connective tissue of the papillae and that of a considerable zone beneath this showed an extremely marked infiltration of leukocytes. There were large numbers of lymphocytes and plasmocytes, and a few polymorphonuclears were also seen. There was also a marked vascularity. The end of the section which showed least acanthosis had melanin in the basal layer of the epithelial lining.

The sections represented a definite epithelial change which might best be described as a precancerous process which appeared to have taken place as a result of the proliferation of cells resembling those of the basal layer.

The histologic diagnosis was erythroplasia of the preputial mucosa.

DISCUSSION

DR. MARION B. SULZBERGER: I think the clinical appearance of the lesions is certainly in accord with the picture in cases of erythroplasia which I have observed. Nevertheless, one must be careful in making this diagnosis, and one should not make it on clinical grounds alone. I believe that it is essential to make a histologic examination. I think that the main points that must be considered in the histologic diagnosis were brought out by Dr. Satenstein and me (Erythroplasia of Queyrat, ARCH. DERMAT. & SYPH. **28**:798 [Dec.] 1933).

Since our report was published many cases have been presented with the diagnosis of erythroplasia. I feel sure that this disease is more common than it was at first supposed to be. However, I feel that in many instances the diagnosis is insufficiently supported.

The question of treatment is important. I do not know what the best treatment for this condition really is, as I have not treated enough patients with that disease to form a final opinion. The few patients I have treated have derived best results from radical electrocoagulation followed by moderately filtered roentgen irradiation.

DR. FRANK E. CROSS: I agree with Dr. Sulzberger that in many cases presented as instances of erythroplasia the diagnosis is erroneous. Have any cases of this disease been observed in circumcised men?

DR. MAX BERKOVSKY: I had occasion several years ago to observe a patient who presented on the penis a lesion extremely itchy and strongly suggestive of lichen planus. Arsenic therapy brought about improvement. Subsequently the condition proved to be erythroplasia. In answer to Dr. Cross' question, I can state that this patient was circumcised.

DR. DAVID L. SATENSTEIN: In the section I observed basal cell epithelioma and none of the characteristics of erythroplasia. I can cite another recent instance in which a diagnosis of erythroplasia was made and the condition proved to be basal cell epithelioma. The slides were sent to me from California.

DR. G. F. MACHACEK: Nowhere in the literature have I been able to find what are definite criteria of erythroplasia. I have seen a variety of lesions on the penis which were called erythroplasia; however, on histologic examination some of these proved to be Bowen's disease, epithelioma or chronic dermatitis. I agree with Dr. Satenstein that sections of tissue in this case look like basal cell epithelioma, but the process is definitely walled off, and this does not answer the criteria of basal cell epithelioma. I therefore think that the more probable diagnosis is erythroplasia.

DR. CHARLES A. GREENHOUSE: In my opinion erythroplasia is not characterized by a definite pathologic picture. The diagnosis can be arrived at only by exclusion, and a clinical study of the lesion must be made.

Sulzberger and Satenstein in their article stated that irregular hypertrophy of rete pegs, abrasion of the epidermal surface with small vesicle formation, disturbance and disorganization of basal cell layer and a moderate cellular infiltration of the upper portion of the cutis were observed. I believe that this picture can be observed in many other cutaneous conditions and therefore cannot be regarded as pathognomonic.

DR. DAVID L. SATENSTEIN: Will Dr. Machacek explain what he means by the term "walled off"?

DR. G. F. MACHACEK: The section showed normal somewhat keratinized epidermis; then a sharp change occurred and "basal-like" cells extended to within a hair line of the surface. One side of the slide showed leukoplakia; the other was fairly normal except for some acanthosis. There were no separate buds, just a regular pattern. I must say that erythroplasia presents a problem difficult to solve. There is no doubt that microscopic examination of a lesion of clinical erythroplasia shows a variety of diseases.

DR. DAVID L. SATENSTEIN: The development of buds is common. I have a whole series of slides of basal cell epithelioma showing that type of change. I also have a number of slides of erythroplasia in all stages which fail to show this change.

DR. THEODORE ROSENTHAL: I am glad that this case elicited so much discussion. The evolution of the lesions was interesting. I had the opportunity to see this patient five years ago when the first lesion appeared. The dark field examination and the Wassermann test of the blood gave negative results. The term "erythroplasia" was unknown at that time. After a lapse of five years the patient returned. The original lesion was larger, and a new one had developed. At this time my co-workers and I were inclined to make a diagnosis of erythroplasia. From the discussion on the histologic changes it appears that basal cell epithelioma is a probable diagnosis. The question arises whether this patient presents an erythroplasia which has undergone malignant change, since that disease is considered a precancerosis.

PITYRIASIS LICHENOIDES ET VARIOLIFORMIS ACUTA. Presented by DR. ISIDORE M. LASHINSKY.

This boy, aged 11 years, presented himself on March 26, 1936, because of a generalized eruption on the trunk and extremities of one week's duration. The

eruption consisted of ovoid and round pinkish brown somewhat elevated scaly lesions varying in size from that of a pinhead to that of a large pea. It involved the extremities and the trunk, where it followed along the lines of cleavage of the skin. Interspersed between these lesions were a number of small vesicles, a few pustules and lesions bearing a dark central crust. During the summer the condition has greatly improved. Some of the lesions disappeared, leaving depigmented spots.

On Oct. 10, 1936, the patient presented a new crop of lesions.

At present the eruption is fairly generalized, has a mottled appearance and is especially pronounced on the flexor surfaces of both forearms, on the gluteal region, on the penis and on the lower extremities. Some of the lesions were secondarily infected as a result of scratching. There are a few scars on the lower portion of the back.

Physical examination as well as the routine laboratory examinations gave gave essentially negative results.

MINNESOTA DERMATOLOGICAL SOCIETY

LOUIS H. WINER, M.D., *President*

Oct. 23, 1936

FRANCIS W. LYNCH, M.D., *Secretary*

PITYRIASIS LICHENOIDES ET VARIOLIFORMIS ACUTA. Presented by DR. SAMUEL E. SWEITZER, Minneapolis.

This man, aged 42, first noticed the eruption three weeks ago. There is no history of ingestion of drugs.

There is a generalized eruption which consists of erythematous papules, pustules and vesicles with necrotic centers. A section is shown.

DISCUSSION

DR. H. E. MICHELSON, Minneapolis: I wish to call attention to the fact that often severe scarring follows this condition. I believe that the condition is a trichophytid.

DR. SAMUEL E. SWEITZER, Minneapolis: I showed the patient to Dr. Ulrich. He thought the cutaneous lesions were due to emboli.

NODULO-ULCERATIVE TERTIARY SYPHILIS. Presented by DR. JOHN F. MADDEN, St. Paul.

J. S., a laborer aged 40, was first seen in January 1936, exhibiting ulcers which covered the anterior and lateral surfaces of both legs from the knees to the ankles. The borders of the ulcers were polycylic and shelving. The patient had a chancre fifteen years ago, and the ulcers appeared about six years ago. The Wassermann reaction of the blood was 4 plus; the spinal fluid showed no abnormality. The patient had received no treatment before he entered the Ancker Hospital, in St. Paul, in January 1936. The ulcers were practically healed when the patient was discharged from that hospital at the end of February, after having received eight intravenous injections of neoarsphenamine, an average dose of 0.45 Gm. being given at each injection, and eight intramuscular injections of 2 grains (0.13 Gm.) of bismuth subsalicylate in oil. The ulcers enlarged when he was ambulant, although he continued to receive antisyphilitic treatment. When he was readmitted to the hospital in June 1936, the ulcers had enlarged to about their original size.

DISCUSSION

DR. JOHN F. MADDEN, St. Paul: When syphilis is complicated by stasis any amount of antisyphilitic treatment has no effect on the existing ulcer, and it must be supplemented by treatment for local stasis.

DR. H. E. MICHELSON, Minneapolis: In long-standing severe syphilis of the lower portion of the leg prolonged treatment may be necessary to effect a cure, and if the ulceration does not heal completely as a result of antisyphilitic treatment alone other measures may be necessary. Almost always if the treatment is carried out long enough healing eventually takes place. At the university dispensary a woman was treated for over a year before healing was effected.

SQUAMOUS CELL CARCINOMA OF THE PENIS; TREATED SYPHILIS. Presented by DR. JOHN F. MADDEN, St. Paul.

T. B., a laborer aged 46, consulted a physician on April 12, 1936, because of a painful swollen, edematous condition of the penis, which was diagnosed balanitis. On April 16, 1936, a dorsal slit was made and an ulcer found at the site of the present lesion. Although there was an extensive foul purulent discharge, a dark-field examination was made and spirochetes (Spirochaeta pallida) were said to be observed. The Wassermann reaction of the blood was positive at that time, and a diagnosis of primary syphilis was made. The patient was given eight intravenous injections of neoarsphenamine and twelve intramuscular injections of bismuth subsalicylate, but the ulcer continued to increase in size. The patient noticed palpable inguinal lymph glands in August 1936.

When he was seen at the clinic of the Ancker Hospital in October 1936 the patient stated that in 1929 he had a penile lesion, a generalized eruption and a positive Wassermann reaction of the blood, that a diagnosis of syphilis was made and that he was given some intravenous and intramuscular injections at that time. A hard painful ulcer the size of a 25 cent piece involving the right side of the glans penis and prepuce was found. The border was rolled, everted and firm. There were painless, hard, inguinal lymph glands the size of a large olive on both sides.

The Wassermann reaction of the blood was negative. The hemoglobin content was 70 per cent and the number of white blood cells 10,200. The differential cell count showed 74 per cent polymorphonuclears and 26 per cent lymphocytes. Urinalysis gave normal results. Frei tests with mouse brain antigen on October 14 and 20 gave definitely positive results. A biopsy specimen taken from the border of the ulcer revealed squamous cell carcinoma of grade 3.

DISCUSSION

DR. MADDEN: This case emphasizes the importance of making a biopsy early when lesions thought to be syphilitic do not respond to antisyphilitic treatment.

LYMPHOGRANULOMA VENEREUM (?). Presented by DR. JOHN F. MADDEN, St. Paul.

LUPUS VULGARIS. Presented by DR. JOHN F. MADDEN, St. Paul.

SARCOID. Presented by DR. JOHN F. MADDEN, St. Paul.

Mrs. A. R., a housewife aged 55, states that painless deep-seated bluish red nodules appeared on the lateral surface of the left arm about fifteen years ago. These nodules have increased somewhat in size, but there have been no other changes. There is no history of tuberculosis in the patient's family. Roentgen examination of the chest and physical examination showed no evidence of pulmonary tuberculosis. The Wassermann test of the blood and the Mantoux test gave negative results. The patient also has a bright red bulbous involvement of the nose of six years' duration. A section taken from a lesion on the arm showed typical sarcoid of Boeck.

DISCUSSION

Dr. John F. Madden, St. Paul: The section was taken from the arm. I do not think that the lesions on the arm are related to those on the nose. In my opinion, the condition of the nose is acne rosacea.

Dr. H. E. Michelson, Minneapolis: I think it is important that in a case in which a diagnosis of sarcoid has been verified by histologic examination a careful examination of the chest and bones be made, for certainly physicians interested in this condition agree that widespread involvement is common.

Dr. L. A. Brunsting, Rochester: I think that the condition on the nose might be considered to be acne rosacea. Generally, sarcoid has been considered to be a manifestation of a relatively benign form of tuberculosis, but that is not always the case. Recently I saw a patient who presented a number of nodular lesions of sarcoid over the trunk and a purplish discoloration with infiltration of the cheeks resembling lupus pernio. Microscopic examination confirmed the diagnosis. Roentgen examination showed fibrocystic changes in the bones of the hands and dense nodular opacities in the chest. After several years of observation during which no apparent change took place, there occurred during the past summer a rapid decline in general health, and the patient died of fulminating pulmonary tuberculosis.

Note.—The eruption improved markedly when solution of potassium arsenite U. S. P. was given by mouth.

Cheilitis Exfoliativa. Presented by Dr. John F. Madden, St. Paul.

Mrs. E. W. A., a housewife aged 26, states that the eruption on her lips has been present for the past year and a half. The lips show extensive inflammation accompanied by purulent crusting, scaling and edema. There is also a slight seborrhea of the scalp. The patient has been treated with numerous local applications and with roentgen therapy, but only slight improvement has resulted. The eruption cannot be related to cosmetics, tobacco, tooth-paste or any known cause. The patient is exceptionally nervous and cries on the slightest provocation. She is now in the eighth month of pregnancy, and the eruption began to improve during the last three months, although no local treatment has been given.

DISCUSSION

Dr. L. A. Brunsting, Rochester: My co-workers and I have investigated a number of these cases in regard to the element of specific hypersensitivity, but our studies have been practically fruitless. Of course, when the lips are involved in the way they are in this patient they are usually sensitive to contact with such foods as acid fruits, tomato juice and spinach. If a glass tube is used in drinking this factor can be eliminated. In these cases also there is frequently a hypersensitivity to the rays of the sun, although the values for porphyrin in the urine and in the feces are nearly always normal. Treatment with roentgen rays or radium in cases of cheilitis exfoliativa must be carried out with great caution, because if actinodermatitis is superimposed on the original process the problem of treatment is immensely multiplied.

Dermatitis Herpetiformis. Presented by Dr. John F. Madden, St. Paul.

Parapsoriasis (Pityriasis Lichenoides Chronica). Presented by Dr. John F. Madden, St. Paul.

J. M., a laborer aged 55, states that he first noticed an eruption on the legs about thirty years ago. This spread and gradually involved the trunk. At present the entire trunk and the upper and lower extremities are affected. The eruption consists of superficial dull red papules from the size of a pinhead to that of a pea, which are well defined and capped with a slight scale. There are no subjective sensations. The patient has been treated with many types of local applications with no benefit.

The Wassermann reaction of the blood was negative, and the urinalysis gave normal results. A section is shown; the microscopic changes are in keeping with the diagnosis of parapsoriasis.

NEUROMA; LUPUS VULGARIS. Presented by DR. JOHN F. MADDEN, St. Paul.

F. H., a laborer aged 50, states that the orange-sized lesion of lupus vulgaris on the right side of the neck appeared twenty years ago after an operation for tuberculosis of the cervical lymph glands. About two years ago he was seen with a painful, irregular nodule the size of a half-dollar on the lateral surface of the upper third of the right forearm. He complained of pain in the nodule radiating up the arm to the shoulder. The nodule was removed, and a biopsy was made. The pain ceased but recurred in June 1936. In October 1936 a hazelnut-sized nodule was felt proximal to the scar from the previous operation. The pain had become so intense that the patient was unable to carry on his work. The Wassermann reaction of the blood was negative. The Mantoux reaction was 4 plus. The results of histologic examinations are in keeping with the diagnoses of lupus vulgaris and neuroma.

A CASE FOR DIAGNOSIS (SCROFULODERMA? PYODERMA?). Presented by DR. JOHN F. MADDEN, St. Paul.

J. M., a Mexican boy aged 9 years, presents three lesions: one over the right zygoma, one at the left angle of the jaw and one on the posterior surface of the upper third of the left thigh. The history is unreliable, but finally the patient and members of his family agreed that the first lesion appeared over the zygoma about six weeks ago, after the boy sustained a bump while playing. The other lesion on the face appeared within ten days after the first, also as a result of injury, and the one on the thigh followed a kick. All the lesions are fixed to the underlying tissue, and the ones on the face seem to be fixed to the bone. They are slightly painful, irregular and dully erythematous ulcers with a purulent material covering the bases and rather verrucous and irregular borders. There are palpable cervical lymph glands on both sides, but those on the right side are the size of an olive and more painful than the others. Roentgen examination of the underlying bones and of the chest showed no abnormality.

A section is shown.

DISCUSSION

DR. SAMUEL E. SWEITZER, Minneapolis: The lesion on the cheek looks tuberculous. All the lesions appear to be of about the same age.

DR. H. E. MICHELSON, Minneapolis: My interpretation is that the patient has a primary tuberculous complex of the skin, that the initial lesion is on the cheek and that the other lesions are secondary. It must be emphasized that the first lesion in the primary complex is almost always erroneously diagnosed as some form of pyoderma. The prognosis is usually good, and systemic involvement from a primary complex does not occur as a rule.

DR. JOHN F. MADDEN, St. Paul: The diagnosis of the primary complex of tuberculosis did not occur to me. However, further studies must be made in order to verify this diagnosis.

NOTE.—Further studies indicated that the condition was a primary tuberculous complex.

A CASE FOR DIAGNOSIS (DERMATITIS HERPETIFORMIS?). Presented by DR. JOHN F. MADDEN, St. Paul.

Mrs. A. F., a housewife aged 45, states that she did not have any eruption until 1932. At that time she had a miscarriage after being pregnant five months. While she was still in the hospital an intense pruritus developed over the entire body; the face was not affected. This was soon followed by an intensely pruritic

generalized symmetrical, cyclic eruption. The eruption consists of papular, vesicular and urticarial lesions. Several days before each menstrual period the itching and eruption become much worse. The condition reaches its height during, and gradually subsides after, menstruation. This cycle has been constant for four years. The eruption is not influenced by intake of potassium iodide.

Dr. A. L. Welsh, formerly of the Mayo Clinic and now of Cincinnati, made a diagnosis of dermatitis herpetiformis after making his test for this disease on the blood. Urinalysis gave normal results. The hemoglobin content was 82 per cent; there were 9,000 white blood cells. The differential blood cell count showed 74 per cent polymorphonuclears, 25 per cent lymphocytes and 1 per cent eosinophils. The Wassermann reaction of the blood was negative. The sugar content of the blood was 126 mg., and the calcium content, 9.5 mg., per hundred cubic centimeters. Roentgen examination of the chest gave negative results.

DISCUSSION

Dr. F. W. Lynch, St. Paul: Many observers regard the association of dermatitis herpetiformis with pregnancy as of endocrine origin. In this connection, the exacerbation of this patient's eruption at the time of menstruation is notable, particularly since her menstrual periods occur irregularly at intervals of from fourteen to twenty-one days. Moreover, she has recently had a period of five months without menstruation. Attempts to regulate the menstrual function may result in some relief from the eruption.

A Case for Diagnosis (Parapsoriasis? Psoriasis?). Presented by Dr. John F. Madden, St. Paul.

Mrs. A. O. K., aged 62, states that her eruption appeared approximately forty-five years ago. It was first noticed on the legs; then it involved the arms, and later it covered most of the cutaneous surface except the face and hands. The eruption appeared as reddish to fawn colored irregular plaques varying in size and having a rather fine adherent dry scale. No bleeding points appear when the scale is removed. There are no subjective sensations. Many local applications and ultraviolet and roentgen irradiation have been used with no benefit. The eruption has been influenced neither by treatment or by infections or other illnesses which the patient has had.

The Wassermann reaction of the blood was negative. Urinalysis gave normal results. A section is shown.

DISCUSSION

Dr. Louis A. Brunsting, Rochester: There are a number of discrete keratoses of the palms, which suggest chronic arsenicalism.

Kraurosis Vulvae; Lichen Sclerosus et Atrophicus. Presented by Dr. John F. Madden, St. Paul.

Mrs. L. W., a housewife aged 48, states that pruritus of the external genitalia developed about ten years ago. This has become progressively worse until the patient now loses a good deal of sleep and is very nervous. Examination revealed atrophy of the labia majora and labia minora. The labia are studded with irregular white patches of leukoplakia, show several excoriations and are wrinkled, glistening and inelastic. There are also grouped flat-topped irregular white papules with a stippled surface on the medial surfaces of the thighs, on the pubic region and on the breasts. Sections from lesions of both types are shown; their appearance is in keeping with the diagnoses.

DISCUSSION

Dr. Samuel E. Sweitzer, St. Paul: Vulvectomy is the proper procedure.

Dr. H. E. Michelson, Minneapolis: I had the privilege of pointing out lesions on the vulva in a patient with Hallopeau's disease about two years ago and again in two patients who were presented in Chicago. I do not believe that in all cases of kraurosis of the vulva the condition is on this basis, but the possibility should be kept in mind.

A Case for Diagnosis (Morphea? Balanitis Xerotica Obliterans?). Presented by Dr. John F. Madden, St. Paul.

A. L., a laborer aged 31, states that the lesion on the penis appeared about two years ago. It started at the urethral meatus and gradually spread over the glans. There has been no noticeable change in the size or consistency of the lesion since June 1936. The lesion has never been painful or scaly, and its appearance has never changed. There is no noticeable change in the size of the urethral meatus or in the urinary stream. The lesion is a bluish white plaque involving the anterior half of the glans penis and seemingly extending up the urethra. It is slightly more firm than the rest of the glans, and there is a slight apparent elevation at the border. The patient has never had gonorrhea or a urethral discharge. Instruments have never been introduced into the urethra.

The Wassermann reaction of the blood was negative. Permission for biopsy was refused.

DISCUSSION

Dr. John F. Madden, St. Paul: In perusing the literature I noted that two of the main points in differentiating morphea from balanitis xerotica obliterans are the extension of balanitis xerotica obliterans for some distance up the urethra and the atrophy of the urethral meatus and involved portion of the glans.

Dr. H. E. Michelson, Minneapolis: I believe that this is an example of balanitis xerotica obliterans and that the degree of involvement is low. It seems to me that the condition should be classified with the localized morpheas.

Congenital Keratoderma of the Palms and Soles. Presented by Dr. John F. Madden, St. Paul.

Cutaneous Moniliasis; Oral Thbush. Presented by Dr. Carl W. Laymon, Minneapolis.

W. L., a girl aged 6 years, has white patches in the mouth and a weeping eruption on the hands and feet which, according to the history given by the foster-mother, appeared when the patient was an infant. Since that time various forms of treatment have been tried by several physicians with little benefit. The lesions in the mouth have recently responded well to application of methylrosaniline.

There are numerous milk-white superficial patches on the tongue and buccal mucosa. The palms and soles are involved by a patchy reddish orange dermatitis. Vesicles can be seen in various places. The skin about the toes is macerated. All the toe-nails, both thumb-nails and the nail on the left fourth finger are greatly thickened, rough and pitted. Monilia was present in scrapings from the mouth and skin.

DISCUSSION

Dr. Carl W. Laymon, Minneapolis: This patient's condition closely resembles that of a patient presented at the Mayo Clinic at the meeting of the Mississippi Valley Dermatological Society in September 1936 (Arch. Dermat. & Syph., to be published).

Pigmentation; Addison's Disease. Presented by Dr. D. D. Turnacliff, Minneapolis.

This man, aged 48, one year ago noticed that he became easily fatigued. He has lost 11 pounds (5 Kg.). Pigmentation appeared during the past winter and became very marked during the summer; it is fading now, leaving a line of increased pigmentation at the border, especially on the neck. The pigmentation is marked on the face, neck and hands, namely, on areas which are exposed to the sun's rays, but it also extends below the collar line. There is also increased pigmentation around the nipples, the perianal region and the genitalia.

The Mantoux test reaction was 4 plus. A roentgenogram of the chest showed old healed tuberculosis.

The blood pressure increased from 85 systolic and 60 diastolic to 110 systolic and 60 diastolic when the patient received extract of adrenal cortex. At present he is following a diet with increased salt intake. He does not report any subjective improvement resulting from the treatment.

DISCUSSION

DR. LOUIS A. BRUNSTING, Rochester: Patients with Addison's disease are not presented often at meetings of dermatologic societies, but I think that dermatologists should be cognizant of the fact that the changes in the skin frequently represent one of the first symptoms of the syndrome. More detailed examination may reveal a history of vague abdominal distress, weakness, a general decline in health with loss of weight and lowered blood pressure. Chemical analysis of the blood shows a relatively low level of chlorides and an increased urea content. In the management of such cases it is necessary not only to remedy the deficiency in the chlorides but at the same time to restrict the intake of potassium in the diet. This has been discussed elsewhere. (Kendall, E. C.; Mason, H. L., and Myers, C. S.: Concerning the Chemical Nature of the Hormone of the Adrenal Cortex, Proc. Staff Meet. Mayo Clin. **2**:350-352 [May 27] 1936. Allers, W. D.; Nilson, H. W., and Kendall, E. C.: Studies on Adrenalectomized Dogs: The Toxic Action of Potassium, Proc. Staff Meet. Mayo Clin. **2**:283-288 [April 29] 1936.) Kendall has shown that adrenalectomized dogs can be intoxicated to the point of death by merely increasing the amount of potassium in the rations. Obviously, it is unwise to place the entire burden of the responsibility for benefits from treatment on the use of extracts of adrenal cortex unless these other factors are taken into consideration.

DETROIT DERMATOLOGICAL SOCIETY

WILLIAM G. WANDER, M.D., *President*

Oct. 27, 1936

ARTHUR E. SCHILLER, M.D., *Recorder*

PSORIASIS. Presented by DR. GEORGE VAN RHEE and DR. J. H. COBANE.

H. S., a girl aged 12 years, born in the United States, presents a pruritic eruption covering the entire body. Up to June 1936 she was entirely well. After she was vaccinated an eruption developed on the arm and spread over the entire body.

There is a generalized papulosquamous slightly erythematous eruption. The lesions are definitely scaling, and removal of the fine mica-like scale shows the bleeding points typical of psoriasis. No laboratory work has been done. The case is presented because of the incidence of psoriasis after vaccination.

DISCUSSION

DR. GEORGE H. BELOTE: The psoriasis appeared after vaccination; however, the girl says that her brother also has psoriasis. This illustrates the point that patients are likely to connect unusual occurrences with their various cutaneous conditions, and sometimes in this manner one is led astray by the history. I have no doubt that the eruption appeared, as the patient says, at the time of, or immediately after, the vaccination, but I doubt that the vaccination had anything to do with it.

DR. HARTHER L. KEIM: I think patients call the attention of physicians to this sort of relationship sufficiently often to warrant giving it more consideration. It seems to me that in many of these patients the soil is prepared and that tonsillectomy, vaccination or other metabolic insults frequently serve as the trigger

mechanism which initiates the active manifestations of the disease. The frequency with which this observation holds true, especially in regard to psoriasis, leads me to disagree with Dr. Belote.

DR. LOREN W. SHAFFER: The members who attended the meeting of the state medical society were, I think, rather surprised at the attitude taken by the state commissioner of health, who stated that he felt that when there was a family history of psoriasis physicians were not even justified in vaccinating children, as vaccination may precipitate, give grounds for or help to bring on a condition of this nature.

DR. O. M. GRUZHIT: The fact that psoriasis appeared in a girl who is near the time of puberty after she was vaccinated and developed in her brother without an outside excitant rules out vaccination as a direct cause. The frequent appearance of psoriasis at the time of puberty suggests some disturbance in the normal mechanism of the metabolism of the skin. It would be desirable to study the cases of psoriasis appearing at puberty to ascertain what factors may be responsible, i. e., whether general metabolism or endocrine disbalance may not be involved.

DR. ROBERT C. JAMIESON: At the risk of giving some one the idea that the gonadotropic substance from the urine of pregnant women is good for everything, I wish to say that a few years ago Dr. Van Rhee and I used that substance in the treatment of psoriasis. I made a series of ten tests, and Dr. Van Rhee made, I believe, ten tests also. In only one case, that of a girl about 13 or 14 years old who had a profuse eruption of the guttate type of psoriasis, was the response fairly good after a series of twenty injections. The lesions cleared up in about two or three months, and the skin remained practically clear for three years. This observation can be taken for what it is worth. The medication is not intended as a cure for psoriasis but merely as another means of treatment, and I think it would be more applicable to adolescent than to older patients. The latter apparently were not affected at all by the treatment.

A CASE FOR DIAGNOSIS. Presented by DR. ROBERT C. JAMIESON.

J. K., an American, an accountant, has had no previous cutaneous disease. His general health is good. He underwent a tonsillectomy when he was a child. The upper teeth were extracted in 1933. The lower teeth have many fillings but are otherwise good. The patient had rheumatic fever in 1935.

In 1929 a thickened, fissured and peeling area appeared at the end of the right thumb, involving the distal end of the terminal phalanx. No pruritus or vesicular lesions are present. The proximal border is well defined. Slight improvement occurs in the summer. The nails are dry and brittle, and the thumb nails are scaphoid. On the middle knuckle of the right middle finger is a thickened, fissured area. These lesions have been present almost constantly and remain unchanged regardless of treatment.

Scrapings contained no fungi.

Treatment has consisted of about a skin unit of roentgen irradiation administered on April 14 and on June 15, of unfiltered radium irradiation on August 7, of application of all forms of keratolytic and other local agents and of administration of thyroid.

DISCUSSION

DR. GEORGE H. BELOTE: Some years ago I had a similar lesion on my right thumb. It was treated with formaldehyde and with every other agent that had been suggested. Finally I discovered that I was scratching my matches with my right thumb nail. I think the patient's lesion is caused by contact with some offending substance.

DR. ROBERT C. JAMIESON: He has worn a glove finger for weeks at a time, and no improvement has resulted.

DR. J. R. ROGIN: Does he use carbon paper much?

DR. ROBERT C. JAMIESON: I do not think so.

DR. HARTHER L. KEIM: I agree with the opinion expressed by Dr. Belote, and I believe that the offending substance has not yet been discovered.

HEMIATROPHIA FACIALIS WITH PIGMENTATION OF THE FACE, ARM, SHOULDER AND TRUNK. Presented by DR. GEORGE VAN RHEE and DR. J. H. COBANE.

L. K., a woman aged 22, single, born in the United States, complains of asymmetry of the face and of pigmentation of the face, shoulder, arm and trunk. The family history is irrelevant. The patient had the usual childhood diseases.

About eight years ago she first noticed whitish, itchy spots involving the hands and the entire left side. Pigmentation ensued. She has noticed a depression accompanying the pigmentation. There is marked atrophy. This pigmentation and loss of subcutaneous tissue have been confined to the left side, except for an area on the right buttock which is likewise involved. The patient is not acutely ill.

There are no active cutaneous lesions at present. The pigmentation involves the depressed areas, the left side of the forehead, face and nose, the left side of the trunk and both buttocks. We feel that the pigmentation is the remains of a former active process.

Report on a roentgen examination was as follows: The skull was examined in the right and left lateral positions. The hands were examined in the dorsopalmar direction. A study was made of the lower dorsal and lumbosacral portions of the spine and of the pelvis. The tables of the skull showed no abnormality, and there was no evidence of increased intracranial pressure. The sella turcica was normal in size and shape, and the vessel markings of the inner table of the skull were normal in depth and distribution. The left hand showed some atrophy of the soft tissues, but there was no evidence of disturbance of the bone structure. There was normal joint spacing throughout both hands. The lower dorsal and lumbosacral vertebrae and the pelvic bones were normal.

Examination gave entirely negative results except for the fact that the electrocardiogram showed a mitral stenosis curve. The blood cell count was within normal limits. The urinalysis gave normal results, except for a small trace of albumin. The Kahn reaction of the blood was negative. Histologic examination showed hyperpigmentation of the skin and edema of the stratum corneum. No inflammatory process was noted.

No treatment has been given.

RECURRENT PURPURA OF THE LEGS ASSOCIATED WITH THE MENSES. Presented by DR. THOMAS H. MILLER.

J. P., a housewife aged 35, complains of a recurrent purpuric eruption on the legs. The first attack occurred five years ago. She has two children living and well, and there is no history of purpura in the family. In 1931 the patient first noted during her menstrual periods a purpuric eruption of the legs which cleared up entirely during the interim and recurred at the next menstrual period. This process continued during the next five years. Meanwhile the patient underwent an amputation of the cervix uteri. At various times during this period she also received injections of ovarian extract, estrogenic substance, solution of posterior pituitary, thyroid extract and liver and iron, all of which caused no appreciable change in the condition. Studies of the blood, including a platelet count, gave normal results. In June 1936 a panhysterectomy was performed. After the operation there was no purpuric outbreak for about six weeks. Then the eruption recurred, remaining for a month. Since then major and minor outbreaks have occurred at irregular intervals.

Both legs, from the ankles to the middle of the thighs, are covered with small ecchymotic lesions. These lesions are so closely situated as to give the general appearance of reticulation. On each leg a few inches above the knee is an encircling band of skin which is normal in appearance and corresponds to the position of the garter.

DISCUSSION

DR. FRANZ BLUMENTHAL, Ann Arbor, Mich.: In the history it is stated that the menstruation was painful, but I see no reason for the purpuric eruption of the erythematous form which occurred during menstruation. It is my opinion that the patient took some medication and that this may have caused the eruption.

DR. ROBERT C. JAMIESON: She told me that these eruptions occurred at any time after the operation. There is, of course, a possibility that she has a periodic absorption of some toxin resulting in the development of these purpuric lesions on the extremities.

DR. ARTHUR E. SCHILLER: I agree with Dr. Blumenthal. The patient has not menstruated since the operation, and she states that she has nervous symptoms, for which she is taking various types of medication. It is my opinion that the entire picture is probably due to the medication.

DR. THOMAS H. MILLER: A case of similar manifestations was described by Ellman and Welen in the *British Journal of Dermatology* as follows: "A normal woman, 58 years of age, has been subject to recurrent purpura, limited to the lower extremities, since the age of 47. Before the menopause, at 52, the purpura appeared in small spots only. Since then the attacks have been worse, recurring every month and lately every two months. Large ecchymotic patches on the extremities, below the knees, and sometimes swelling of these parts, accompany the attacks. Fading of the purpura takes place suddenly, and, in about two weeks, all traces have disappeared. Mental shock, apparently, can make the attacks worse. Intramuscular injections of calcium gluconate were beneficial."

SCLERODERMA INVOLVING THE ENTIRE LEFT SIDE OF THE BODY. Presented by DR. CLYDE K. HASLEY.

RECURRENT LICHEN PLANUS. Presented by DR. CLYDE K. HASLEY.

POROKERATOSIS OF NEVOID TYPE. Presented by DR. ARTHUR E. SCHILLER.

B. B., a schoolgirl aged 12 years, presents on the sole of the right foot small hyperkeratotic lesions with follicular dilatation and plugging. The lesions are isolated, feel firm to the touch and are all about the size of a pinhead.

Biopsy showed hyperkeratosis with plugging of the follicles. The diagnosis based on histologic observations was porokeratosis.

DISCUSSION

DR. HOWARD J. PARKHURST, Toledo, Ohio: I am not familiar with porokeratosis, having observed only two cases previously. In those cases the borders were in linear formation, whereas in this case, the lesions on the border of the sole seem to be discrete. However, they fit in fairly well with my conception of porokeratosis, namely, a keratotic elevation about the openings of the sweat ducts. Therefore, I accept the diagnosis for want of a better one.

DR. HARTHER L. KEIM: I am sorry that I did not see the section, but I think that the diagnosis of porokeratosis is tenable. Moreover, I understand that the biopsy report concurred with the clinical picture. The eruption is different from that in the two or three cases I have observed. In those cases there was a more typical wall, the umbilication was larger and the typical black line about the border was present.

DR. LOREN W. SHAFFER: I think the comments made by Dr. Fred Wise at the meeting of the state medical society could be accepted. He stated that there is a nevoid type of porokeratosis which presents scattered papulokeratotic lesions. My opinion is that the eruption in this case fits well histologically and clinically with that diagnosis, although the common type of porokeratosis is, of course, different.

COCCIGENIC SYCOSIS. Presented by DR. LOREN W. SHAFFER.

B. L., a Jew aged 47, born in Russia, presents an eruption on the bearded region of the face and on the pubic region. The disease began in November 1931 as a typical coccigenic sycosis of the bearded region. Lesions soon appeared around the umbilicus, the pubic areas and the backs of the hands. He was treated at the Grace Hospital, Detroit, at the Eloise Hospital, Eloise, Mich., at the University Hospital, Ann Arbor, Mich., and at the Mayo Clinic, Rochester, Minn., in 1932, without results. He has been under my care since November 1932. He failed to improve with all kinds of treatment, including roentgen and ultraviolet irradiation, iontophoreses, administration of vaccine and antiseptic applications. In April 1934 treatment with chlorhydroxyquinoline was begun, and improvement has been remarkable. The patient was presented before this society in the fall of 1934 (ARCH. DERMAT. & SYPH. **31**:729 [May] 1935) as practically cured. He continued to use the ointment since, holding the condition under satisfactory control until April 1936, when a relapse occurred. The condition has become progressively more acute in spite of the intensive use of the ointment. There is a diffuse infiltrative erythema all over the old areas, and new groups of follicular pustules have appeared. The patient is presented to show the possibility that only temporary benefit results from treatment with chlorhydroxyquinoline. Suggestions for further management are requested.

DISCUSSION

DR. GEORGE H. BELOTE: My co-workers and I have obtained some surprising results with a new apparatus for ultraviolet irradiation consisting of a small, single tube lamp which is supposed to give a monoband beam. We have a patient with coccigenic sycosis who has received so much roentgen irradiation that no one dares to give him more. He has also been treated with chlorhydroxyquinoline. He was treated with the new lamp and has shown surprising results in the last week. I believe that this lamp has been used extensively in industrial plants in cases of infected wounds.

DR. WILLIAM G. WANDER: I have had some experience with this lamp and have obtained remarkable results. I believe that it would be well worth experimenting with.

DR. FRANK STILES: I used a lamp of this type for a month and tried its effect on fungoid infections. My experience was not favorable.

NECROBIOSIS LIPOIDICA DIABETICORUM. Presented by DR. ROBERT C. JAMIESON.

M. M., a Jewess aged 21, born in the United States, complains of several large reddish yellow rounded areas distributed chiefly on the lower third of each leg.

There is no history of dermatoses in the family. The patient's mother had diabetes, and one maternal and one paternal aunt are diabetic. Otherwise the history is irrelevant. Four brothers and sisters are living and well. The patient had no previous illness of importance. She has been married for three years and has one child. Her weight is 152½ pounds (71.2 Kg.), and her height, 5 feet and 3¼ inches (1.6 meters).

The first lesion, which appeared in 1931, was situated on the left ankle, at the onset it was slightly elevated, reddened rounded and measured about 2 cm. in diameter. No pain or itching was present. This lesion progressed slowly, enlarging peripherally; it had a reddish violaceous border; later a yellowish atrophic sclerodermatous appearance developed in the center, and a number of telangiectatic vessels appeared. No ulceration of a definite character has been present.

On the right ankle is a rounded area measuring 4 by 6 cm. and presenting the following appearance: a reddish, violaceous border and an atrophic morphea-like center traversed by a few telangiectatic blood vessels. A small area in the center is slightly abraded, but no definite ulceration is present. On the lower third of the left leg are three similar lesions of about the same size, and on the outer aspect of the upper third of that leg is the lesion which developed last. It is like

the others and presents a marked resemblance to morphea. These lesions have slowly progressed peripherally and the same characteristics are now present in all.

Diabetes is known to have been present for five years, but no attempt has been made to control it except by a desultory dietary restriction and a few treatments with insulin.

Urinalysis showed a 4+ reaction for sugar. Lack of time has not permitted examinations of the blood and other studies of the urine to be made. A biopsy was made in 1931 at the Grace Hospital, and another was made in 1933 at the City of Detroit Receiving Hospital; both showed tuberculosis. A third biopsy as well as studies of the blood will be made later. The patient has been receiving ultraviolet irradiation, but no appreciable effect has been noted.

The patient was presented first in 1931 at the Grace Hospital at which time the condition was diagnosed as sarcoid.

The results of thorough studies will be reported later.

DISCUSSION

DR. LOREN W. SHAFFER: The patient said she was diabetic and, I think, the clinical appearance of the lesions is compatible with a diagnosis of necrobiosis lipoidica diabeticorum. There have been, I believe, two other patients with the disease at the City of Detroit Receiving Hospital since the condition was first reported. This patient has unusual manifestations: the lesions are more numerous than usual, and a necrosis with ulceration is present in some of the lesions. As far as I know, although definite scleroderma and slight atrophy occur in the center and some crusting has been observed in some of the reported cases, ulceration has not been present. Otherwise the color, distribution and appearance fit well with this diagnosis.

DR. HARTHER L. KEIM: I presented a case of this condition at a meeting about five years ago, with a diagnosis of sarcoid. The members, except Dr. Wile, agreed that the condition was sarcoid.

DR. ROBERT C. JAMIESON: A biopsy was made at the City of Detroit Receiving Hospital and, although I have not seen the report, I was informed that the specimens showed tuberculosis of the skin.

NEW YORK DERMATOLOGICAL SOCIETY

PAUL E. BECHET, M.D., *President*

Oct. 27, 1936

EUGENE F. TRAUB, M.D., *Secretary*

A CASE FOR DIAGNOSIS (PARAPSORIASIS VARIOLIFORMIS?). Presented by DR. EUGENE F. TRAUB.

A. S., a girl aged 2 years, was first seen at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital on Oct. 26, 1936, presenting an eruption on the trunk of one year duration. There is no family history of cutaneous disease.

Scattered over the trunk are numerous slightly elevated papules covered with scales; a less severe eruption is present over the extremities. These lesions, which are round or oval vary in size but do not exceed 4 or 5 mm. in diameter. Some of the lesions are distinctly vesicular; however, it is doubtful whether any of those which appeared recently exhibit true atrophy, despite the suggestion of thinning of the epidermis which some of them show. A feature which in my opinion is important and one which has been stressed repeatedly in cases of this disease is the presence of many areas of depigmentation which may mark the sites

of healed lesions. The eruption appears in crops, each crop remaining for two or three weeks and another sprinkling of lesions developing after that period. There is no pruritus.

A biopsy has been made, but as yet no report has been received.

NOTE.—Since the patient was presented it has been reported that psoriasis was definitely excluded on the basis of microscopic examination. The lesion which was examined was distinctly moist and vesicular, and the histologic picture did not justify a diagnosis of parapsoriasis varioliformis. However, in view of the fact that only two diagnosis were considered and the psoriasis could be excluded on the basis of histologic examination, the diagnosis of parapsoriasis seemed likely to be correct.

DISCUSSION

DR. HENRY H. WHITEHOUSE: I think the picture agrees with the diagnosis. There is no itching. The patches are certainly parapsoriasis.

DR. FRANK C. COMBES: I suggest the diagnosis of ordinary psoriasis. The lesions are somewhat too papular for psoriasis, but the condition exhibited by this patient is an acute form, and I think that papular lesions are present in the acute stage of guttate psoriasis. The scales are centrally attached, whereas in parapsoriasis varioliformis the scales are usually peripherally attached, producing a collaret in some of the lesions. Furthermore, I do not see any varioliform lesions.

DR. EDWARD R. MALONEY: I agree with Dr. Combes.

RECKLINGHAUSEN'S DISEASE. Presented by DR. HOWARD FOX.

I. F., a boy aged 9 years, has suffered from the eruption for the past three years. He presents a generalized symmetrical sparse eruption consisting of small soft tumors, many of which are apparent only on palpation. There are also a moderate number of yellowish brown macules from the size of a pinhead to that of a pea. The patient is undernourished, weak and mentally below par. He has a partial foot drop on the left side, a small area of localized hypertrichosis in the region of the cricothyroid notch and a moderate hypertrichosis of the back. There is marked diminution of vision. He has one brother, aged 14, who is normal. Neither of his parents and none of his relatives has or had a similar disease. His mother states that he has received forty-two injections of the gonadotropic substance from the urine of pregnant women and that after he received that treatment he became more nervous and irritable than he had been.

A CASE FOR DIAGNOSIS (KERATOSIS FOLLICULARIS?). Presented by DR. A. BENSON CANNON.

M. M., a housewife aged 28, has had a generalized eruption for six years. It began in the summer of 1928, appearing around the waist at a time the patient was wearing black wool bloomers. The eruption consisted of tiny scaly papules which left a purplish red macule after the scale fell off. She also noticed small blisters in the same area. No itching, burning or other irritation accompanied the eruption. The rash gradually spread over almost the entire body. The eruption improves in the summer. When it began the patient consulted a physician and was told that she had Darier's disease. A histologic examination was said to have confirmed this diagnosis. She was treated with ultraviolet radiation. The condition gradually grew worse. The patient's hands and feet are cold and moist most of the time. Before the eruption appeared she had been in good health.

There is a generalized, almost universal, eruption, which is most marked on the face, arms, abdomen, legs and ankles, where there are numerous pinhead-sized slightly scaly bluish red papules. On the upper lip there is a red raised eczematous plaque, and numerous similar small lesions are scattered over the body. Only on the sides of the feet and on the backs of the hands are there discrete pinhead-sized red lesions with a central scale. The scalp is not affected.

Examination of the blood showed 0.05 mg. of arsenic per hundred grams of dry blood. Tests with 0.1 cc. of old tuberculin gave negative reactions with 1:1,000,000,000 and 1:100,000 dilutions. Cutaneous tests for sensitivity to foods, wool, rayon, silk, bacteria, pollens and cosmetics gave negative results.

The histologic diagnosis was chronic dermatitis. Sections of a small piece of skin showed a moderate hyperkeratosis and a slight parakeratosis. There was marked edema of the epidermis which caused the formation of microscopic vesicles. The rete pegs were long, thin and edematous. The corium was edematous, and a marked infiltration of small round cells was seen in the more superficial layers of the corium. The most marked infiltration was present about the blood vessels and was seen to penetrate the deeper layers along these structures. There was no morphologic change which suggested keratosis follicularis of Darier.

Treatment has consisted of heliotherapy, local application of oil of bergamot and intravenous administration of sodium thiosulfate and calcium thiosulfate. The skin cleared up while the patient took sun baths in Bermuda, only a few lesions on the feet persisting. The skin remained in good condition all summer, and no eruption appeared until in the fall after the patient had worn a black dress and dark shoes and hose.

DISCUSSION

DR. HOWARD FOX: I saw this patient five or six years ago and presented her before the society. At that time she had several dozen small warty lesions, situated mostly on the lateral aspect of the trunk. I made a clinical diagnosis of Darier's disease; this was confirmed histologically by the late Dr. Walter J. Highman. The members who were present also agreed with that diagnosis. At present there is nothing to suggest Darier's disease, and it is difficult to understand the effect of sunlight on the condition if it is Darier's disease.

DR. EUGENE F. TRAUB: I agree with Dr. Fox that the condition is not Darier's disease now.

A CASE FOR DIAGNOSIS (URTICARIA PIGMENTOSA ACQUISITA?). Presented by DR. JOSEPH J. ELLER.

W. J., a woman aged 27, single, well nourished, of Norwegian descent, presents numerous light brown circular and ovoid flat papules ranging in size from that of a lentil to that of a pea. The lesions are located on both temples, on the forehead, on the submaxillary and submental regions, on the supraclavicular region and on the extensor and flexor surfaces of both arms. They have been present since January 1936, when they appeared as erythematous macules and papules. There was intense pruritus. There soon developed a fine scaliness and light brown pigmentation. The lesions have been present for nine months; new ones have appeared during the past three weeks. The patient states that she has taken no iodides, bromides or salicylates and no phenolphthalein. Her general health has always been good; she has lost no weight and has suffered no emotional disturbances. There is some oily seborrhea. Dermographism cannot be elicited.

The Wassermann reaction of the blood was negative. On Nov. 2, 1936, material for a biopsy was obtained, and Drs. Weidman and Fraser made a histologic investigation.

Sections examined microscopically by Dr. Fred Weidman showed no definite histologic picture, but the following report was made: Sections stained with cresyl violet and polychrome methylene blue for the detection of mast cells showed no abnormal increase in this type of cell. Urticaria pigmentosa could be definitely ruled out. Sections stained with hematoxylin and eosin showed precociously keratinized cells in the prickle cell layer. Dr. Fraser concurred in this description.

NOTE.—Since the patient was presented the urine has been examined, and large quantities of bromides have been found. When she was questioned the

patient admitted that she had taken large amounts of alka-seltzer before the onset of the eruption. She had also taken two bottles of rem for a cough about two years ago.

DISCUSSION

DR. GEORGE M. MACKEE: Regardless of the alleged rapid development and of the alleged pruritus, my diagnosis is keratosis seborrhoeica.

DR. FRANK C. COMBES: I agree with Dr. MacKee. The lesions look like keratoses. Itching is a variable symptom. The patient shows no evidence of marks of scratching at present. I favor the diagnosis of keratoses rather than that of urticaria pigmentosa or prurigo.

DR. EDWARD R. MALONEY: I agree with the diagnosis of keratoses and suggest further investigation as to the possibility of arsenic having been ingested.

A CASE FOR DIAGNOSIS (ROSACEA?). Presented by DR. HOWARD FOX.

Mrs. E. W., aged 47, has suffered from the eruption for the past five months. It involves the middle two thirds of the face, including the forehead, the nose, the chin and some parts of the cheeks. It is fairly well defined and consists of diffuse redness, scaling and moderate telangiectasis. On pressure with the diascope no apple jelly nodules are visible. The patient is of medium size; she is somewhat overweight, but her general health is good. She has suffered from indigestion for a number of years. She had been given dilute hydrochloric acid for three months without any benefit. The eruption also failed to improve after five fractional doses (75 roentgens) of roentgen radiation, and according to the patient's statement it became worse as a result of exposure to the rays of the sun and radiation from quartz mercury vapor lamps. Tuberculin tests gave negative results with dilutions from 1 to 100,000 and from 1 to 1,000,000; with dilutions from 1 to 1,000 and from 1 to 10,000 the results were positive. The sedimentation test showed a drop of 25 mm. in one hour.

Histologic examination made by Dr. T. J. Riordan gave the following results: The epidermis was approximately normal in thickness. Edema of the rete with one or two areas showing a single or double ballooned cell was noted. The corium was edematous, and there were separation and swelling of the collagen fibers. The blood vessels in the region of the subpapillary plexus were dilated and surrounded by streaky foci of infiltration consisting of round cells. There was no evidence of tuberculoid structure to suggest a diagnosis other than the clinical one of rosacea. There was no evidence of lupus erythematosus. The diagnosis was subacute inflammatory process, probably rosacea.

There has been no response to a second course of treatment consisting of administration of dilute hydrochloric acid and dietary measures.

DISCUSSION

DR. GEORGE M. MACKEE: I think the condition is rosacea.

DR. HENRY H. WHITEHOUSE: I agree with the diagnosis of rosacea.

DR. EDWARD R. MALONEY: I agree with that diagnosis, with the stipulation that the rosacea might possibly be on a seborrheic eczema basis.

DR. J. GARDNER HOPKINS: In view of the evidence presented by Dr. Feit which indicates that many pustular rosaceas are bacterids, I think it would be worth while to examine this patient for foci of infection. She has a number of crowned teeth.

DR. HOWARD FOX: In my opinion this is a case of rosacea, although other diagnoses have been seriously considered by a colleague. The histologic structure, the results of the tuberculin test and the clinical appearance apparently exclude Lewandowsky's rosacea-like tuberculid. The histologic examination also fails to show any evidence of lupus erythematosus.

ARGYRIA DUE TO MILD PROTEIN SILVER. Presented by DR. HOWARD FOX.

L. L., a woman aged 45, a singer, first noticed the eruption one year ago. It involves the face, the neck, the upper part of the chest, the back of the hands, the forearms and the finger-nails. The eruption consists of a diffuse slaty bluish pigmentation which is most marked on the face. The finger-nails show a moderate bluish pigmentation of, and a marked pigmentation for a variable distance beyond, the lunula. In some of the nails this appears as a distinct transverse band about 1 mm. in width. For the past two years the patient has been using a 10 per cent solution of mild protein silver twice a week for the relief of nasal catarrh. She invariably drops the solution in the nose and allows it to trickle down over the pharynx. For the past five years she has also used a hair dye containing silver nitrate.

DISCUSSION

DR. CHARLES MALLORY WILLIAMS: There is no doubt about the diagnosis. I think it is an interesting feature that the mild protein silver was dropped into the nose and not applied on a swab. In other words, absorption was from the stomach and not from the nasal mucous membranes. A large amount of the drug is sure to be swallowed by that method. I should like to know whether Dr. Fox has any record of cases of argyria produced by application of mild protein silver on a swab, as is done by rhinologists.

DR. J. FRANK FRASER: I agree with Dr. Williams. Argyrosis does not result from absorption of the drug by the schneiderian membrane. The mild protein silver is swallowed, and absorption takes place from the gastro-intestinal tract.

DR. A. BENSON CANNON: I have read of several cases of argyria resulting from the instillation of mild protein silver in the eye. I have observed a number of cases in which the most marked evidence of pigmentation has been on each tonsil where the drug had been applied with a swab. Whether the pigmentation developed as a result of swallowing the drug I do not know. Certainly by far the most pronounced pigmentation was on the tonsil. I am of the opinion that absorption can result from local application alone and that it is not necessary to swallow the drug; this is proved by cases of argyria resulting from treatment of the eye.

DR. GEORGE M. MACKEE: I have observed cases like those mentioned by Dr. Cannon, but I think that in those cases one must investigate the history carefully. One patient who had had applications of mild protein silver to the eye had, on her own initiative, as I discovered later, used the drug in her throat because it had helped her eye so much.

DR. FRANK C. COMBES: If I understand Dr. Cannon's remarks, he means that the discoloration produced by silver is confined to the area of application. I do not think that this is evidence of absorption such as that which is present in he case under consideration. I have records of one case in which local pigmentation of the skin resulted from the application of mild protein silver. Pigmentation occurred after instillation of the solution into the conjunctiva and involved the skin for about 2 cm. below the eye. This of course was also entirely local and was not due to any absorption of silver from the skin or mucous membranes.

DR. HOWARD FOX: In answer to Dr. Williams' question I wish to say that the patients with this condition whom I have seen dropped a 10 per cent solution of mild protein silver into the nose and allowed it to fall back into the throat. This is the third patient with this kind of involvement I have shown before the society.

HIRSUTIES. Presented by DR. FRANK C. COMBES.

H. K., a woman aged 19, a brunette, presents an excessive growth of hair on the extremities and abdomen, particularly on the legs and thighs. The distribution of the hair on the abdomen approaches the male type. The menstrual

history is normal, menstruation having started when the patient was 10 years old. The condition has some hereditary background; the patient's sister, aged 11 years, shows a heavy growth of hair; her mother and her mother's two sisters are similarly affected, though the condition is less marked in those members of the family. Suggestions as to treatment are requested.

DISCUSSION

DR. FRANK C. COMBES: There have been suggested for treatment of this condition partial adrenalectomy and the administration of estrogenic substances. Treatment with estrogen has been used in England. I have used it previously but without satisfactory results. I wonder whether any of the members has had any experience with this treatment.

DR. EDWARD R. MALONEY: My co-workers and I have used both theelin and theelol with no effect at all. Dr. Sharlit has used estrogen in many cases with practically no results. He found that it has an effect on some of the fine lanugo-like hairs but not on the stiff hairs.

KERATOLYSIS CONGENITA. Presented by DR. PAUL E. BECHET.

M. R., a man aged 22, from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, states that his dermatosis has been present all his life. He also states that a sister has had the same condition since birth but that as far as he knows no other members of his family are or were similarly affected. There are no subjective symptoms, but he can at will rub off the top layer of the skin on any part of the arms, trunk or thighs, leaving a slightly reddened surface which persists for a few hours. The abnormality is especially marked in the hot weather; when cold weather supervenes the anomaly disappears. The palms and soles are not affected.

Physical examination gave negative results. The urine was normal chemically and microscopically. The Wassermann and the Kahn tests were negative. Histologic examination showed no definite pathologic changes.

A CASE FOR DIAGNOSIS: MORPHEA-LIKE LESIONS WITH A TUBERCULOID STRUCTURE. Presented by DR. EUGENE F. TRAUB.

S. G., a Norwegian woman aged 34, was first seen as a private patient on Oct. 7, 1936. At the age of 15 the patient injured her legs while she was skiing. Varicosities developed. These were treated by injections. After the patient gave birth to a child a little over four years ago an eruption appeared on the left leg; about one year ago, the right leg became involved. At present, in addition to the lesions on the legs there are several lesions on the thighs, and one is present on the left temple. All the lesions are rounded; in the earliest stage they seem to consist of an erythematous ring with a distinctly palpable border which then seems to spread, involving the skin in the center of the patch. The older areas have a peculiar waxy yellow appearance, are markedly indurated, though somewhat depressed below the general level of the skin, and present considerable telangiectasia. The appearance of the old lesions on the leg is strikingly similar to the description of lesions of necrobiosis lipoidica diabeticorum.

Urinalysis gave negative results except for the presence of from ten to fifteen white cells and from three to five red cells per high power field. The sugar content of the blood was 99.5 mg., and the cholesterol content, 160 mg., per hundred cubic centimeters.

The histologic diagnosis was granuloma annulare (?). The section showed rather dense islands of cellular exudate throughout the entire depth of the corium. The epidermis was normal, and there was a band of uninvaded connective tissue between it and the cellular exudate. In the middle portion of the corium the islands of cellular exudate were grouped about a large mass of acellular swollen collagen fibers. The cellular exudate consisted largely of lymphocytes, numerous giant cells of Langerhans type, plasma cells and occasional endothelial cells.

DISCUSSION

DR. J. FRANK FRASER: I could not see any features of a tuberculoid structure in the microscopic section. There was a degenerative hyperplasia of the connective tissue with giant cell formation. There were no epithelioid tubercles. These giant cells showed a foamy cytoplasm such as one sees in cases of disturbed lipoid metabolism. The diagnosis of necrobiosis lipoidica diabeticorum has been suggested, but the characteristic necrotic masses are absent, and the patient does not have diabetes. My diagnosis on the basis of the histologic picture is xanthoma. The color of the lesions, which Dr. Traub tells me is distinctly yellowish under daylight, supports this interpretation. I suggest that more sections be studied with fat stains.

DR. EUGENE F. TRAUB: The differences of opinion on the histologic structure represent the views of various men especially qualified to speak on these points. I spoke of a tuberculoid structure simply because of one of the reports submitted to me in which the following statement was made: The cellular exudate consisted largely of lymphocytes, numerous giant cells of the Langerhans type, plasma cells and occasional endothelial cells. Dr. Fraser apparently disagrees with these observations and seems to think that the changes would fit in with those of xanthoma. There is no evidence of diabetes, which is essential for a diagnosis of necrobiosis lipoidica diabeticorum.

A CASE FOR DIAGNOSIS: BULLOUS ERUPTION OF THE FACE. Presented by DR. HOWARD FOX.

P. A., a man aged 49, born in Italy, a barber, suffered from pneumonia and abscess of the lung eight years ago. Later he was under observation for three months in a sanatorium for persons with tuberculosis where frequent examination of the sputum for tubercle bacilli gave negative results. A roentgenogram of the chest made recently showed no abnormalities. A roentgenogram made by Dr. Law showed chronic sinusitis involving the left frontal sinus; the left ethmoid bone and the left antrum; a slight subacute process superimposed involved both sides.

The eruption first appeared eighteen months ago. It has been chiefly confined to the upper part of the forehead near and above the hair line, involving the area where the hat band comes in contact with the skin. Occasionally lesions have been present on the nose and cheek, but none has ever appeared in the mouth. On four or five occasions there has been a remission lasting two weeks. With this exception there has been a continuous appearance of a few flaccid bulla surrounded by an erythematous border ¼ inch (0.64 cm.) wide. The duration of an individual lesion is about fifteen days. There is some itching a few hours before a bulla appears, but there is none while the lesions are present. The patient has not lost any weight since the eruption developed.

Pels-Macht tests made on Aug. 14 and Aug. 27, 1936, showed a phytotoxic index of 46. A blood cell count made on August 29 showed 5,000 leukocytes with 61 per cent neutrophils and 6 per cent eosinophils. A second count made on October 3 showed 3,900 leukocytes with 29 per cent neutrophils, and 6 per cent eosinophils. The sedimentation rate of the blood was normal. The potassium iodide test for Duhring's disease was not made. Hat band dermatitis was apparently excluded by negative results of patch tests. Histologic examination by Dr. T. J. Riordan was reported on as follows: There was a complete separation of the epidermis from the corium, presumably a bulla. The breach between the epidermis and the corium contained clumps of red cells and homogeneous and strand fibrin. The epidermis was wavy, but the papillary body was obliterated. The basal membrane was intact and only occasionally showed a thin band of papillary corium attached. There were no noteworthy changes in the rete. The floor of the bulla showed an edematous diffusely infiltrated band of corium extending to, and including, the blood vessels of the subpapillary plexus. Adjacent to these capillaries, which were dilated, were foci of deeper infiltration. The infiltra-

tion consisted of round cells for the most part; there were unusual numbers of eosinophils and some fibroblasts. The remainder of the corium was highly edematous and sparsely infiltrated. The deeper portion of the corium showed a few hair follicles and one or two cross sections of coil glands which presented no noteworthy changes. The hypoderm appeared normal.

The patient has received twelve injections of gold sodium thiosulfate, but no improvement has occurred. There was temporary improvement after the administration of solution of potassium arsenite. The patient's general health appears to be excellent.

DISCUSSION

DR. EUGENE F. TRAUB: Because of the location of the eruption and the strong suggestion that these bullous lesions leave a thin atrophic skin, I suggest the diagnosis of bullous lupus erythematosus.

DR. GEORGE M. MACKEE: Was eruption due to drugs ruled out?

DR. HOWARD FOX: There is no history of ingestion of drugs.

DR. J. FRANK FRASER: I cannot make a clinical diagnosis. Dr. Fox's pathologic report states that there is a loss of elastic tissue in the upper layers of the corium. That fact would support the diagnosis of lupus erythematosus.

DR. PAUL E. BECHET: In my opinion lupus erythematosus of the bullous type seems to be the most plausible suggestion.

DR. JOSEPH J. ELLER: I suggest that an examination for hematoporphyrin be made.

DERMATITIS ACTINICA (DUE TO ROENTGEN RAYS). Presented by DR. HOWARD FOX.

S. G., a man aged 41, was presented before the New York Dermatological Society on Feb. 26, 1935 (ARCH. DERMAT. & SYPH. **32**:984 [Dec.] 1935). He is now presented to show the results of electrodesiccation performed by another physician. Although the skin is still severely damaged, the disfiguring freckle-like pigmentation from which he formerly suffered has been removed.

A CASE FOR DIAGNOSIS (SARCOMA? KAPOSI'S SARCOMA?). Presented by DR. EUGENE F. TRAUB.

F. R., an Italian man aged 65, was first seen at my office in September 1936. He stated that he had first noticed a lesion on the instep of the right foot about nine weeks before. His physician removed a small portion of the lesion, and it was reported from Albany, N. Y., that the specimen showed Kaposi's sarcoma. Four weeks ago the entire lesion was excised with the electric cutting current. Within about ten days a rather hard, firm, rounded mass measuring 3 by 4 cm. in its widest diameters developed in the center of the wound. Three pathologists examined the slides prepared from the removed lesion and made the following diagnoses, respectively: (1) Kaposi's sarcoma; (2) fibrosarcoma; (3) spindle cell sarcoma.

Filtered roentgen radiation was given locally, and large doses of arsenic were administered. These measures have had only an indifferent effect on the local lesion. The patient is presented for diagnosis, and suggestions as to treatment are requested.

DISCUSSION

DR. J. FRANK FRASER: I cannot agree with the diagnosis of Kaposi's sarcoma. The appearance of a solitary lesion, the rapid growth and the prompt recurrence at the original site after surgical removal and in spite of roentgen therapy are facts which do not fit in with that diagnosis. Kaposi's sarcoma is radiosensitive; all other sarcomas are radioresistant.

The section which Dr. Traub gave me for study shows a clearcut picture of spindle cell sarcoma. The objection may be offered that Kaposi's sarcoma may end up as a spindle cell sarcoma. That is true, but the process of differentiation requires time, and even in the advanced stages there can usually be seen evidence of the

characteristic vascular changes observed in Kaposi's disease. Although the duration in this case is comparatively short, none of the angiomatous changes are present. I believe that the correct diagnosis is spindle cell sarcoma.

DR. HOWARD FOX: The first question to decide is whether the original lesion was Kaposi's sarcoma or fibrosarcoma. The second question is whether the present ulceration represents sluggish granulation tissue or the original disease. To settle the second question another histologic examination of this ulcer should be made. In his discussion of the histologic changes Dr. Fraser omitted to say that there was an absence of hemorrhage, which would be another point against the diagnosis of Kaposi's sarcoma.

DR. J. FRANK FRASER: There is no hemorrhage or pigment in the section.

DR. GEORGE M. MACKEE: I agree with Dr. Fox. The logical thing to do now is to find out whether there is sarcoma at present; therefore, I suggest that another biopsy be made. If sarcoma is present now, a plastic operation should be performed.

DR. EUGENE F. TRAUB: The tumor-like area that looks something like granulation tissue in the center of the wound developed in a little over a week after the removal of the original growth. It seemed to me before roentgen treatment was begun that this growth was too hard and too smooth to represent spongy granulation tissue, which as a rule does not develop quite so quickly. It was my impression from the beginning that this was some type of malignant lesion despite the confusion occasioned by the various opinions expressed regarding the section examined.

BLASTOMYCOSIS. Presented by DR. A. BENSON CANNON.

A. M., an Italian man aged 43, eleven years ago had what he thought was a mosquito bite. This appeared while he was working on a railroad in West Virginia. The lesion, which is described as being a little larger than a pinhead, remained stationary in size for three years. From time to time the patient squeezed a little serum from it. Then it began to spread, involving an area about the size of a man's hand the first year. The patient was told by a physician in West Virginia that he had tuberculosis of the skin, and he was treated with local applications of iodine. He was treated for tuberculosis by several physicians in New York, but the lesions continued to spread. He then went to a hospital where all the attending physicians agreed that the condition was tuberculosis. He was treated with infra-red and ultraviolet rays, and great improvement resulted. He had a severe burn and discontinued treatment, and the trouble reappeared.

The patient went to Italy three years ago and was given twelve injections of arsphenamine; this was followed by complete recovery. A recurrence developed on the right side three months after his return from Europe, and he began taking injections of the same preparation. The lesions gradually spread, despite forty-five injections.

Two previous histologic examinations are said to have given negative results.

At present there is a white thin atrophic scar beginning at the sides of the neck and extending down over the upper part of the chest, the left shoulder, the upper part of the left arm and left axilla and the upper two thirds of the chest. The lesions at the margins are sharply defined, elevated, ¼ inch (0.64 cm.) wide and covered with brownish crusts. No active sinuses are present. There are scattered areas of telangiectasia in the white scar.

Recently treatment has consisted of intravenous injections of sodium iodide once a week and of ingestion of 70 drops of potassium iodide daily. Decided improvement has resulted.

Tissue was sent for examination for blastomycosis and tuberculosis. On Oct. 9, 1936, direct examination of the tissue for blastomycosis gave negative results; cultured tissue macerated in saline solution on honey agar showed no growth; two guinea-pigs were inoculated with macerated tissue. The first guinea-pig died on October 17; autopsy showed no involvement. The second animal died on October 20; autopsy showed peritonitis. Tissue from many organs was preserved for sectioning, but the report has not yet been received.

The histologic diagnosis was chronic granuloma with structures suggesting blastomyces (autolyzed tissue). The sections unfortunately represented cutaneous tissue which had been allowed to autolyze. The epidermal portion showed evidence of disintegration. Beneath this there was a definite granuloma, the finer structure of which was not definite. Within the granulomatous tissue there were bodies the appearance of which suggested the organisms of blastomycosis. One or two of these situated in the region of the epidermis suggested the American type of organism; unfortunately they might also have represented degenerated swollen epidermal cells. Within the granuloma were seen translucent small bodies which suggested the European type of organisms. Again the question arose whether or not these might be ghosts of cells.

DISCUSSION

DR. HOWARD FOX: It is rare to see blastomycosis in New York; such an extensive process is particularly rare.

A CASE FOR DIAGNOSIS (LUPUS ERYTHEMATOSUS?). Presented by DR. JOSEPH J. ELLER.

J. L., a man aged 34, a baseball player, presents a single ovoid lesion about 3 cm. in diameter on the forehead above the left eye. He states that the lesion developed at the site of pressure from a cap. The lesion, which was at first an erythematous plaque, gradually healed in the central portion, resulting in the present annular configuration. The appearance has remained unchanged for the past five months.

Five years ago an infiltrated squamous cell epithelioma appeared on the lower lip near the left labial commissure and was treated at the New York Skin and Cancer Hospital. There has been no recurrence. Two years ago the patient had a scaly dermatitis of the lower lip which was diagnosed as lupus erythematosus.

At present there is a discoid oval lesion on the forehead. The border is dusky red, moderately infiltrated and covered with a greasy yellowish scale. The central portion has undergone almost complete involution. The pilosebaceous follicles in the center as well as those at the periphery of the lesion are seen with a lens to be distinctly larger than normal, and some show a blunt keratotic plug occluding the orifice. There is no other cutaneous lesion at the present time, and the lips and mucous membranes are normal except for the scar at the left commissure. The patient presents no clinical evidence of syphilis, either cutaneous or visceral, and the Wassermann reaction of the blood is negative.

Treatment has consisted of local application of carbon dioxide snow and of injections of bismuth subsalicylate at five day intervals. After the first two injections the appearance of the lesion definitely improved. The two succeeding injections apparently produced no objective change.

DISCUSSION

DR. FRANK C. COMBES: I accept the diagnosis of lupus erythematosus.

DR. HOWARD FOX: There is nothing in my opinion to suggest a nodular syphilid in this case. There are no nodules, and only a scaly ring with slight infiltration is present. I agree with Dr. Combes.

A CASE FOR DIAGNOSIS (PSORIASIS?). Presented by DR. FRANK C. COMBES.

C. R., a man aged 25, presents on the penis a sharply defined erythematous dermatitis with irregular borders covering about one third of the glans. A slight powdery scale is apparent at times. The duration of the eruption is three years. When I first saw the patient, seven months ago, the eruption involved the dorsum of the foreskin, with a patch extending from the frenum up to and around the urinary meatus. The lesion has always been dry, and there are no subjective symptoms. The patient was given four fractional doses (75 roentgens) of roentgen rays without appreciable benefit. He has also used salicylic acid and sulfur oint-

ments and a 3 per cent solution of silver nitrate. For the last four months he has used boric acid ointment. While the lesion has disappeared from its original location, the eruption now covers a slightly larger area.

The Wassermann reaction of the blood was negative. The blood cell count and the urinalysis gave normal results. The sugar content of the blood was 69 mg. per hundred cubic centimeters. A biopsy has not been made.

DISCUSSION

DR. GEORGE M. MACKEE: I agree with the diagnosis of probable psoriasis or possible eczema, but I think that the possibility of erythroplasia should be kept in mind.

DR. HOWARD FOX: Against the diagnosis of erythroplasia is the fact that the lesion has always been dry.

DR. PAUL E. BECHET: I am inclined to agree with Dr. Fox. This is a dry lesion; the only surface change is redness.

DR. FRANK C. COMBES: I took into consideration erythroplasia as a possible diagnosis. However, to my knowledge there have never been any cases of this condition reported in which the lesion has been perfectly dry. Of course, there may be an undescribed dry type of this disease. In addition the fact that there have been improvement in certain areas and complete disappearance of the lesion in others is much opposed to the diagnosis of erythroplasia.

BLACK FURRED TONGUE. Presented by DR. EUGENE F. TRAUB.

H. C. T., a man aged 40, an office worker, was first seen by me in Burlington, Vt., in October, 1936. He stated that his present trouble had begun in May 1936, when he noticed an unusual furriness and thickening of the posterior part of his tongue. He now presents a typical example of black furred tongue. He is presented because the condition is unusually widespread. Suggestions as to therapy are requested.

DISCUSSION

DR. HOWARD FOX: In answer to Dr. Traub's request for suggestions as to therapy I wish to say that Dr. Herman Prinz, dean of the dental school in Philadelphia, recommends the local application of a 10 per cent solution of salicylic acid in equal parts of glycerin and alcohol.

DR. JOSEPH J. ELLER: At a dental meeting years ago applications of 50 per cent solution of lactic acid were recommended for this condition. I have since used that treatment on three patients and have obtained satisfactory results.

RECKLINGHAUSEN'S DISEASE. Presented by DR. HOWARD FOX.

D. D., a man aged 52, born in Lithuania, a baker, from the dermatologic clinic of the Bellevue Hospital, is said to have suffered from the eruption since birth. He states that his mother, two brothers and one sister are similarly affected. The lesions have gradually increased in size and in number and are now present in enormous numbers on the face, trunk and extremities. There are soft flesh-colored tumors varying from the size of a split pea to that of a mandarin orange, some being pedunculated. In addition there is an eruption of yellowish brown macules. The patient is well nourished and apparently of normal intelligence. Many of the lesions on the face have recently been benefited by treatment with the electric cautery.

RECKLINGHAUSEN'S DISEASE ASSOCIATED WITH SCOLIOSIS. Presented by DR. PAUL E. BECHET.

E. G., a Negress aged 28, came to the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, stating that her eruption first appeared fifteen years previously. She also stated that her spinal curvature began

long before her eruption became manifest. She presents pedunculated more or less pigmented tumors of various sizes all over the body. There are many black pigmented areas, which, were the patient white, would be typical café au lait spots. The general health is good.

LICHEN PLANUS ATROPHICUS. Presented by DR. EDWARD R. MALONEY.

G. F., a woman aged 59, presents an eruption of one year's duration on the back, shoulders, chest and forearms. It consists of oval or round ivory-white patches of atrophic skin which vary in size and are surrounded by papules of lichen planus. The larger lesions have apparently been caused by the coalescence of papules of lichen planus followed by atrophy of the patch.

Histologic examination showed an atrophy of the superficial portion of the epithelium, with sclerosis and hyalinization of the immediately underlying connective tissue, in which were scattered islands of round cells, mostly of the lymphocytic type.

MULTIPLE TELANGIECTASIA. Presented by DR. J. GARDNER HOPKINS.

Mrs. M. W., aged 38, has had an eruption on the face, chest and arms for twelve years. It began on both sides of her nose and gradually spread over the entire face, chest and arms. She has received no treatment except injections of quinine and ethyl carbamate (urethane) in July 1936.

The previous history is as follows: Menstruation was regular until two years ago, when it became irregular. A diagnosis of uterine fibroid was made, and the uterus and both ovaries, which were cystic, were removed on March 31, 1936. For the past six years the patient has had ulcers on both legs which resulted from trauma. She says that the legs have been swollen during this time. She has had varicosities on the legs and has received injections at the clinic for the past four months. Healing of the ulcers has resulted. Edema of the legs has decreased since operation. She has been despondent since she was separated from her husband eight years ago. She tires easily and complains of dyspnea on exertion, but there is no orthopnea. Before the onset of the cutaneous condition twelve years ago she was well. She has taken no medicines during the past few years except cathartics. Her only employment, besides housework, has consisted of gluing white hairs on dyed fox pelts; this she has been doing for two years.

Her father died of influenza. There is no family history of tuberculosis or of any condition similar to her present complaint. She has never been pregnant.

The patient is well nourished and poorly developed and appears to be of rather low mentality. Physical examination gave negative results except for symmetrical enlargement of the thyroid and prominent veins in the neck. The heart is slightly enlarged; there is a systolic blow at the apex and the second pulmonic is greater than the second aortic sound. The hands are small, and the fingers are short and stubby. Edema of the legs and healed ulcerations on symmetrical areas on the inner sides of both legs are noted. On the face, scalp, chest and arms are numerous telangiectases, the lesions predominating on the exposed parts.

The blood cell count showed 4,060,000 red cells, 8,500 white cells and 50 per cent hemoglobin. The differential cell count showed 85 per cent polymorphonuclear leukocytes, 9 per cent lymphocytes and 6 per cent monocytes. There were 205,000 platelets. Roentgen examination of chest showed no abnormalities; that of the sinuses showed clouding of the right antrum and ethmoid bones. An electrocardiogram showed an upright T wave and suggested damage to the heart muscle. The results of examination of the skull and the basal metabolic rate have not yet been reported.

DISCUSSION

DR. CHARLES MALLORY WILLIAMS: In most of the cases of the familial type of multiple telangiectasis which I have seen the veins have been more distinct. In this case the red spots are more like capillaries. I did not see any elevated

veins. I should not make a diagnosis of the familial type unless there is a history of the conditions occurring in the family, however, it is often difficult to obtain a history because one patient may have telangiectases and another may have nosebleeds.

DR. FRANK C. COMBES: I should like to make the suggestion of multiple bacterial capillary occlusions as a result of the endocarditis. I should think this diagnosis could be proved by studies of the capillaries.

A CASE FOR DIAGNOSIS (LUPUS ERYTHEMATOSUS?) Presented by DR. EUGENE F. TRAUB.

F. L., a housewife aged 60, was presented at the meeting of the Section of Dermatology and Syphilology of the New York Academy of Medicine on Oct. 6, 1936. Since then the patient has been seen by a surgeon, and because of the extreme pain and tenderness of the ears it has been suggested that the involved parts be removed. She is presented for suggestions as to therapy and as to the advisability of such an operation.

DISCUSSION

DR. HOWARD FOX: At least three histologic examinations have failed to show any evidencce of tuberculosis or epithelioma. This increases the probability that the disease is lupus erythematosus.

DR. EUGENE F. TRAUB: Dr. Whitehouse saw this patient in 1925 at the clinic of the New York Skin and Cancer Hospital. A diagnosis of lupus erythematosus was made at that time, and the patient was given injections of a gold preparation. When my co-workers and I first saw her we were unaware of this and independently made a diagnosis of lupus erythematosus. When we had checked the original histologic reports we found that they were inconclusive. We made three more biopsies, and although no definite diagnosis was possible we were able to exclude tuberculosis cutis and carcinoma. Indirectly this seems to me to help establish the diagnosis of an unusual lupus erythematosus with verrucous overgrowth in some areas.

A CASE FOR DIAGNOSIS (POIKILODERMA VASCULARE ATROPHICANS? MYCOSIS FUNGOIDES?). Presented by DR. EUGENE F. TRAUB.

P. W., a salesman aged 65, was seen at the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital because of an itching eruption affecting the entire body, which had been present for more than a year. When the patient was first seen the eruption was most pronounced on the trunk, although there were lesions on the legs, buttocks, thighs and arms as well. The eruption was patchy and on superficial inspection suggested a mild radiodermatitis. In other words, there seemed to be telangiectasia, pigmentation and a slight degree of atrophy. On the right thigh there was a large solid mass, measuring from 5 to 6 inches (12 to 15 cm.) in diameter, which presented the appearance of a rather soft tumor and suggested the possibility of mycosis fungoides. At present the lesions on the trunk which had seemed so fixed and permanent have in large measure disappeared, definitely showing that true atrophy is not present.

On Sept. 24, 1936, the icteric index was 7.5 units (the normal index is from 4 to 6). The urine showed slight traces of albumin and sugar. The Wassermann reaction of the blood was negative.

A histologic examination made on Sept. 21, 1936, showed poikiloderma vasculare atrophicans. The section showed a thin epidermis with a few rete pegs. In places, there was an increased thickness in the granular layer. In the upper portion of the corium there was a bandlike cellular exudate which in some places was perivascular. The blood vessels in the upper and middle portions of the corium were dilated; many were not surrounded by cellular exudate. The collagen fibers were swollen, and poorly stained. There were a few red blood cells in this area.

DISCUSSION

DR. EUGENE F. TRAUB: Since I wrote to this patient some months ago to come in for this meeting, the lesions on the trunk, which I thought were permanent, have largely disappeared and a more extensive eruption has developed on the lower extremities. The large infiltrated mass on the one thigh, which my co-workers and I thought might be an early tumor of mycosis fungoides, is still present, but it is not as infiltrated and swollen as when I last saw the patient.

DR. HENRY H. WHITEHOUSE: I cannot conceive of lesions on the trunk disappearing if they were poikiloderma. When that condition develops it persists. I never saw poikiloderma disappear on the trunk and appear somewhere else.

CHRONIC LYMPHANGITIS. Presented by DR. J. FRANK FRASER.

J. M., a salesman aged 34, from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, first noticed a "red patch" on the right cheek five months ago. This gradually extended to the nose and the left cheek. There is a red edematous swelling involving the entire nose, the eyelids and both cheeks. There have been partial remissions, but the condition has never entirely cleared up. There has been no rise in temperature or other constitutional symptoms, and the patient's general health is good.

The blood cell count, the sedimentation test, the Wassermann test, the urinalysis, an ophthalmic examination and intradermal tests with Pneumococcus types I, II and III, Staphylococcus aureus, Staphylococcus citreus, Bacillus Friedländer and Streptococcus haemolyticus gave negative results. Staphylococcus toxin and a preparation of Bacillus coli gave a doubtful reaction. There is nothing in the history which might give a clue to the point of entrance for any infection.

HODGKIN'S DISEASE OF THE LYMPHATIC SYSTEM AND OF THE SKIN. Presented by DR. RAY H. RULISON.

M. L., a Jew aged 59, born in Russia, a tailor, married, the father of four healthy children, is presented from the New York Hospital because of a cutaneous eruption which has been present for two years. The previous history is unimportant.

In the past two years the patient has had crops of lesions lasting from four to six weeks. The individual lesions varied in size and appearance, some being macules, others papules and some indolent pustules. There were larger infiltrated lesions, some of which had ulcerated. The lesions remained discrete, and pruritus was constant. About a year before he was examined a generalized adenopathy developed for which the patient was given fourteen roentgen treatments over a period of two months ending in January 1936. Histologic examination of material from a gland made at the Brooklyn Jewish Hospital showed lymphoblastoma. The Pels-Macht test for pemphigus was reported to be negative. The pulse rate was 70; the temperature, 37 C. (98.6 F.), and the blood pressure, 150 systolic and 90 diastolic.

On examination the anterior cervical, the axillary and the inguinal glands were found to be moderately enlarged, discrete, firm and painless.

Scattered over the legs and forearms are discrete maculopapules of which some have indolent pustular centers and some show denudation and oozing. In the same areas are numerous small punched-out scars, some of which show pigmentation. The scars resemble those of papulonecrotic tuberculid. On the left upper portion of the back and on the anterior aspect of the left shoulder are two irregular dollar-sized infiltrated raised tubercles. One of these has a dusky red color and an area of superficial ulceration; the other is not ulcerated and is covered with skin of normal color. Both of these lesions are in the skin and are freely movable on the underlying tissue.

Roentgen examination of the chest did not reveal tuberculosis. The heart shadow was slightly enlarged transversely. In other respects the examination gave normal results.

Cutaneous tuberculin tests gave negative results in 1:1,000,000, 1:100,000, 1:10,000 and 1:1,000 dilutions. Urinalysis and the Kline test gave negative results. The results of two blood counts were as follows: The first showed 4,030,000 red blood cells and 92 per cent hemoglobin; there were 52 per cent adult and 20 per cent immature polymorphonuclear leukocytes, 25 per cent lymphocytes and 3 per cent monocytes; the second showed 4,710,000 red cells and 98 per cent hemoglobin, and there were 46 per cent adult and 24 per cent immature polymorphonuclear leukocytes, 28 per cent lymphocytes and 2 per cent monocytes. Cultures from the cutaneous lesions showed Staphylococcus albus. The sedimentation rate was 1.35, and the hemolytic streptococcus hematocrit reading, 42 per cent.

Specimens for biopsy were taken from (1) an inguinal node, (2) the skin of the right forearm and (3) the tumor on the upper portion of the back. The pathologic report was as follows: 1. The section of the node presented a homogeneous cellular appearance. There were but few blood vessels and only rare fibrous tissue trabeculae. The capsule of the node was not remarkable. Under high magnification its cellular elements were seen to be made up of (*a*) many uniform cells with scanty cytoplasm and darkly staining nuclei which were obviously lymphocytic in origin; (*b*) relatively rare large cells with multilobed nuclei and abundant cytoplasm which were occasionally stellate; these represented giant cells of the Reed-Sternberg variety. Eosinophils were present, their number varying according to the stain used. With the reticulum stain, they were few, being seen only in association with blood vessels and the rare trabeculae. In other words this node presented the appearance of typical Hodgkin's disease. The Dorothy Reed cells, however, being present in association with eosinophils indicated that the condition was atypical Hodgkin's disease. Mitotic figures were present, but they were relatively rare.

2. Examination of the lesion from the back showed skin with the usual appendages, a portion of which was replaced by an ulcer. Beneath this were the usual cellular elements, lymphocytes, fibroblasts and occasional small blood vessels. In a deeper layer, however, even extending into fat, were areas of profuse granulomatous infiltration. The cellular elements presented large giant cells of the Reed-Sternberg type, innumerable lymphocytes and many eosinophilic cells, both polynuclear and multinuclear.

3. The lesions from the arm (forearm) presented a picture similar to that observed in material from the back, though in this case there was no true ulcer and the cellular infiltration was formed much nearer the epidermis.

The diagnosis was Hodgkin's granuloma of the lymph nodes and skin.

The case is presented as one of Hodgkin's disease with true Hodgkin's disease of the skin.

Interesting features are (1) the scarring on the arms and legs suggesting papulonecrotic tuberculid; (2) the multiform character of the cutaneous lesions; (3) the presence of the same histologic structures in the three specimens examined, and (4) the absence of any evidence of tuberculosis.

DISCUSSION

DR. HOWARD FOX: The condition in this case is similar to that in a case which I presented a number of years ago. It is rare.

XERODERMA PIGMENTOSUM. Presented by DR. EUGENE F. TRAUB.

E. W., a woman aged 26, has been a patient of mine for fifteen years. The eruption has been present as long as she can remember. It is extensive and involves not only the exposed parts but affects to a rather marked degree the covered parts as well. The father and mother, two older sisters and one younger brother are all free from the disease and have a normal skin. Many uncles, aunts and cousins are said to be healthy. The father and mother of the patient are cousins. The history has been that of an unusually severe example of this disease passing through all the worst complications possible. The patient has had innumerable epitheliomas of various types, most of which have been treated with appli-

cations of radium. Because of a contracture of one eyelid a plastic operation was performed on the lid; this was only moderately successful. Shortly after the operation there developed in the involved eye a tumor which turned out to be a malignant melanoma. Enucleation was necessary. The patient is presented today (1) because it is rare for a patient with so severe a process to live to the age of 26, and (2) because the remaining eye seems to be exhibiting the same type of change as that which necessitated enucleation of the other eye.

MANHATTAN DERMATOLOGIC SOCIETY

ISADORE ROSEN, M.D., *Chairman*

Oct. 13, 1936

MIHRAN B. PAROUNAGIAN, M.D., *Secretary*

A CASE FOR DIAGNOSIS: ERYTHEMA OF THE FACE. Presented by DR. FRED WISE.

E. S., a schoolgirl, aged 10 years, born in the United States, who is under the care of Dr. Greengrass, presents an erythematous eruption of three months' duration involving the face from the hair line to the neck. She received ultraviolet irradiation in another clinic over a period of two months, treatments being given at weekly intervals. The mother states that when the eruption first appeared it was confined to small symmetrical areas on both cheeks near the nose but that the present widespread erythema associated with moderate edema followed the ultraviolet irradiation. There is a diffuse reddish pink slightly scaly dry erythematous eruption affecting the entire face; it is less pronounced on the nose and forehead. The interesting feature is that there is an area completely free from dermatitis surrounding the mouth for a distance of ½ inch (1.27 cm.) from the lips. The appearance is suggestive of erythema due to ultraviolet irradiation with completely normal periorbital zone; it appears as though the lips had been shielded while the irradiation was given.

The child also exhibits a pronounced degree of cutis marmorata of the upper and lower extremities.

She was seen for the first time today, and there has been no opportunity to make a physical examination.

NOTE.—Further observation led to the diagnosis of infectious erythema.

DISCUSSION

DR. GEORGE M. MACKEE: The child has a generalized anomaly of the cutaneous vascular system, and probably the autonomic nervous system too is abnormal. This may make the blood vessels susceptible to both external and internal stimuli. It is possible that as a result of the ultraviolet irradiation there has developed what has been called erythema solare perstans. On the other hand, the sharp irregular outline should not be present. In view of the fact that the condition was precipitated by ultraviolet irradiation and that sharp margins are present the diagnosis is probably lupus erythematosus.

DR. ISADORE ROSEN: On account of the persistence of the eruption in the involved areas and the absence of tendency to improvement I feel that the diagnosis of lupus erythematosus strongly suggests itself.

DARIER'S DISEASE, ASSOCIATED WITH POSSIBLE DIABETES MELLITUS. Presented by DR. PAUL E. BECHET.

R. D., a woman, aged 55, presents an eruption of fifteen or twenty years' duration involving the scalp, the forehead, the areas behind the ears, the upper and lower parts of the back, the nails and the region under the breasts. On the

forehead there are grayish to dark brown follicular hyperkeratotic papules from the size of a pinhead to that of a split pea; some are discrete and some form coalescing patches. The entire scalp is involved, the condition producing a rough gritty feel. On the upper part of the back there is a large grayish patch which is not raised above the surrounding level. This consists of closely aggregated minute follicular papules covered with fine scaling. Over the dorsolumbar region of the spine there is an oblong patch with lesions smaller than those of the forehead. In the submammary region the lesions are reddish to reddish brown, consisting mostly of discrete closely aggregated, keratotic papules from the size of the head of a match to that of a split pea. The nails show longitudinal fracturing and splitting. On both eyelids are patches of xanthoma. The patient does not complain of thirst, but she has lost 10 pounds (4.5 Kg.) in the past year.

The family history is irrelevant.

Biopsy of a lesion on the forehead confirmed the clinical diagnosis. Urinalysis made on June 4, 1936, showed a 3 to 4 plus reaction for sugar. Since then several examinations have not revealed any sugar. The blood pressure was 200 systolic and 90 diastolic. The right dorsalis pedis was not palpable.

The urea nitrogen content of the blood was 9.5 mg., the sugar content 130 mg., and the cholesterol content, 155 mg., per hundred cubic centimeters.

DISCUSSION

DR. FRED WISE: I have observed two cases of Darier's disease in which roentgen therapy proved to be useless but in which the eruption responded quite well to therapy with infra-roentgen rays.

DR. GEORGE C. ANDREWS: I had one patient with Darier's disease who received a large amount of roentgen irradiation and did not respond to it. I was asked to treat him with infra-roentgen rays, and better results were obtained.

DR. LUDWIG OULMANN: I have treated two patients with Darier's disease with roentgen rays. The result was negative. I gave up that treatment for Darier's disease many years ago.

DR. FRED WISE: I reported the well known case of Mr. Lowenstein and his daughter. The father presented an epithelioma of the bridge of the nose, apparently arising in a lesion of keratosis follicularis.

DR. PAUL E. BECHET: I think the most interesting feature in this case is the lack of familial history. As a rule, in cases of Darier's disease, another member of the family is affected. I had occasion to observe the Siegel family for twenty-seven years; members of various generations suffering from the disease came to the New York Skin and Cancer Hospital. This instance of familial involvement was reported by Trimble many years ago; at that time a mother, three children and one grandchild as well as two brothers of the mother were affected. Since Trimble's report appeared I have observed two new cases in the same family.

A CASE FOR DIAGNOSIS (MAJOCCHI'S DISEASE? HEMANGIOMA?). Presented by DR. GEORGE C. ANDREWS.

H. G., a man, aged 27, was presented before the New York Dermatological Society on Oct. 23, 1923 (ARCH. DERMAT. & SYPH. **9**:504 [April] 1924), by Dr. Wise. At that time the patient had had what was unanimously agreed to be purpura annularis telangiectodes of Majocchi. The condition had appeared when he was 5 years old and had spread to involve the extensor aspects of the upper portion of the arms, the right side of the lumbar region, the right groin, the inner side of the left thigh and the calves. There were deeply pigmented patches the size of a palm and larger, presenting tiny telangiectases and purpuric spots.

This eruption gradually disappeared with the exception of the palm-sized patch in the right groin and of a somewhat larger patch on the right side of the lumbar region. These two patches not only have persisted but have increased in size. At present they are sharply defined, slate colored, telangiectatic and somewhat

lichenified. The probable diagnosis is that of vascular nevi, although the diagnosis of Majocchi's disease was confirmed by a biopsy of material from the patch in the right groin at the time the widespread eruption was present fourteen years ago. The scar at the site from which material was obtained is visible within the pigmented patch on the right groin.

DISCUSSION

DR. GEORGE M. MACKEE: I did not see the patient in 1923. There is no evidence of Majocchi's disease at present. The condition looks like a nevus. The patient assured me that the patch on the right thigh was there, being perhaps the size of a silver dollar, when he was a little boy.

DR. FRED WISE: I recall the case vaguely. The diagnosis of Majocchi's disease, made when the patient was previously presented, was, I believe, confirmed by Dr. Howard Fox. The chances are in favor of this man's having had Majocchi's disease at the previous presentation. I believe that the present lesions have no relation to his previous condition. The lesions present tonight appear to be pigmented nevi.

DR. GEORGE C. ANDREWS: I wish to say that I am of an opinion somewhat different from that of Dr. MacKee as to the theory that the present lesions have no relation to the original eruption. The lesion in the right groin developed at the same time as the original eruption. The biopsy specimen on which the diagnosis of Majocchi's disease was based was taken from a patch in the right groin, and the scar is still visible.

DR. LUDWIG OULMANN: I cannot see a nevus or a nevoid condition. This eruption starts as small papular areas of red lesions, as can be seen in the newer eruption on the abdomen. Some parts of the patch in the right sacral region show these erythematous papules and some parts show the pigmentary end-stage, while the lesion on the right thigh and that on the right groin show only the end-stage of this progressive process.

XANTHOMA TUBEROSUM MULTIPLEX; XANTHELASMA. Presented by DR. PAUL E. BECHET.

M. T., a man aged 37, from the Skin and Cancer Unit of the New York Post-Graduate Medical School and Hospital, was born in the United States. For the past three or four years there have appeared on the extensor surfaces of the elbow and knees numerous yellowish nodules from the size of a pinhead to that of a hazelnut. On the buttocks there are similar lesions, one of which is the size of a pigeon's egg. There are no lesions on the heels. On the back are innumerable pinpoint follicular lesions. On the right upper eyelid are several small patches of xanthelasma. Histologic examination showed xanthoma tuberosum multiplex.

Chemical examination of the blood showed 8 mg. of urea nitrogen; 4.8 mg. of uric acid; 130 mg. of sugar, and 470 mg. of chlorides per hundred cubic centimeters. The cholesterol content has not yet been determined.

DISCUSSION

DR. GEORGE M. MACKEE: The interesting feature in this case is the generalized follicular papular xanthoma. In my experience, this is a rare eruption.

DR. ISADORE ROSEN: I should be much interested in the report on the cholesterol content of this patient's blood. In the treatment of patients with this condition I have obtained good results by reduction of the fat content of the diet and internal administration of lime water.

DR. PAUL E. BECHET: The points brought out by Drs. MacKee and Rosen were the reasons for presenting the case. It is uncommon to see the two types of lesions in association.

LUPUS VULGARIS (RESULT OF THERAPY WITH TUBERCULIN). Presented by DR. FRED WISE.

J. M., a man aged 27, under the care of Dr. C. R. Rein, born in the United States, is presented because of an eruption of the left side of the face of twenty years' duration. The patient has received treatment with various agents, including roentgen rays, radium, carbon dioxide snow and pyrogallol. He has also followed a strict salt-free diet, but no improvement has been noted.

The eruption involves most of the left cheek, the usual configuration being suggestive of the map of Africa. The lesion is of a dusky yellowish brown color. The superior border of the medial part is slightly indurated and raised. On pressure with the diascope one can see the characteristic yellow apple-jelly nodules. There is considerable scarring with telangiectasia involving the inferior border of the medial portion of the lesion, as a result of the previous treatment with roentgen rays, radium and pyrogallol. The main portion of the lesion is covered with fine adherent branny scales.

Tuberculin tests were made on April 6 and on April 8, 1936; the results were as follows: An intracutaneous test with 1 cc. of a 1 : 1,000,000 dilution of old tuberculin caused a negative reaction; when a 1 : 500,000 dilution was used the reaction was likewise negative; a 1 : 100,000 dilution caused a doubtful reaction; a 1 : 10,000, a 1 : 5,000 and 1 : 1,000 dilution each caused a 4 plus reaction.

Roentgen examination of chest gave negative results.

The patient received injections of 1 cc. of old tuberculin at intervals of five, and then of seven, days. He received seven injections of a 1 : 50,000 dilution, seven injections of a 1 : 25,000 dilution and eleven injections of 1 : 20,000 dilution. There has been a slow but gradual improvement of the lesion; the border has flattened considerably, and the scaling has become less pronounced. The small isolated nodule has regressed so that at this time it is a small flat pigmented area.

DISCUSSION

DR. PAUL E. BECHET: I have noticed material improvement even in cases of severe lupus vulgaris of the tumidans type as a result of the subcutaneous injection of increasing doses of old tuberculin.

DR. FRED WISE: Injections of tuberculin have been employed commonly in the past few years in treatment of lupus vulgaris, and favorable results have been obtained. That treatment is especially valuable in bringing about involution of the flat smooth plaques of the disease. In cases of the hypertrophic variety, good results are obtained by means of roentgen therapy combined with injections of tuberculin and restricted diets.

DR. GEORGE M. MACKEE: The type of lupus vulgaris exhibited by this patient is most likely to be benefited by therapy with tuberculin. In my experience, the ulcerated and the hypertrophic type do not respond well to that kind of therapy. The flat atrophic type seems to respond better. At least, I have obtained the best results in cases of this clinical variety.

Book Reviews

Cancer and Diet. By Frederick L. Hoffman, LL.D. Price, $5.00. Pp. 767. Baltimore: Williams & Wilkins Company, 1937.

The author of this volume records and reviews in a well coordinated manner an enormous amount of data compiled over a quarter of a century and procured from all parts of the world. He is a statistician of wide experience and fully appreciates the limitations of this type of research, avoiding the common fallacy of allowing personal opinion to influence his interpretations and conclusions. Of interest to dermatologists is frequent reference to the late L. Duncan Bulkley, many of whose carcinogenic theories, the author feels, were influenced by prejudice and lack of observation of a sufficient number of cases.

The student interested in the significance of metabolic irregularities and biochemical changes in patients with cancer will find this book a valuable reference, as it covers every conceivable phase of relationship of cancer to diet. It includes separate author and subject indexes. The appendix contains tables and miscellaneous matter relating to all aspects of personal history, private life and habits of the thousands of patients with cancer interviewed. These data are arranged in parallel columns with an approximately equal amount of data on normal persons.

The text is divided into five parts. At the end of each the author has inserted a summary in which he interprets the opinions and data of the various contributors. The final chapter is devoted to a general summary and conclusions which because of the vast amount of conflicting evidence presented must necessarily culminate in the vague statement that ". . . overnutrition is common in the case of cancer patients to a remarkable and exceptional degree, and overabundant food consumption unquestionably is the underlying cause of the root condition of cancer in modern life."

Directory of Dermatologic Societies *

INTERNATIONAL

NINTH INTERNATIONAL CONGRESS OF DERMATOLOGY AND SYPHILOLOGY

American Secretary: Dr. Howard Fox, 140 E. 54th St., New York.

FOREIGN

BRITISH ASSOCIATION OF DERMATOLOGY AND SYPHILOLOGY (CANADIAN BRANCH)

J. J. McGovern, President, 4005 Dorchester St., Montreal.
F. L. Boulais, Secretary-Treasurer, 2061 St. Denis St., Montreal.
Place: Montreal. Time: May 1937.

ROYAL SOCIETY OF MEDICINE, SECTION OF DERMATOLOGY

H. W. Barber, President, 7, Devonshire Pl., London, W. 1.
Louis Forman, Secretary, 7, Devonshire Pl., London, W. 1.

NATIONAL DERMATOLOGIC SOCIETIES

AMERICAN MEDICAL ASSOCIATION, SCIENTIFIC ASSEMBLY, SECTION ON DERMATOLOGY AND SYPHILOLOGY

Paul A. O'Leary, Chairman, 102 Second Ave., S.W., Rochester, Minn.
J. Bedford Shelmire, Secretary, 1719 Pacific Ave., Dallas, Texas.
Place: Atlantic City, N. J. Time: June 7-11, 1937.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

Howard Fox, President, 140 E. 54th St., New York.
C. Guy Lane, Secretary, 416 Marlborough St., Boston.

AMERICAN DERMATOLOGICAL ASSOCIATION

John H. Stokes, President, 3800 Chestnut St., Philadelphia.
F. D. Weidman, Secretary, University of Pennsylvania, Philadelphia.
Place: Sky Top, Pa. Time: June 3-5, 1937.

SECTIONAL DERMATOLOGIC SOCIETIES

CENTRAL STATES DERMATOLOGICAL ASSOCIATION

Samuel Goldblatt, President, 3208 Colerain Ave., Cincinnati.
Raymond G. Senour, Secretary-Treasurer, 19 W. 7th St., Cincinnati.
Place: Cleveland. Time: Dec. 5, 1936.

MISSISSIPPI VALLEY DERMATOLOGICAL SOCIETY

A. H. Conrad, President, 3720 Washington Blvd., St. Louis.
Roy L. Kile, Secretary-Treasurer, 3720 Washington Blvd., St. Louis.

NORTHERN NEW JERSEY DERMATOLOGICAL SOCIETY

Henry J. F. Wallhauser, President, Medical Tower, Newark.
Louis J. B. LeBel, Secretary, 165 Grant Ave., Nutley.
Place: Academy of Medicine of Northern New Jersey, Newark. Time: Third Tuesday of January, March, May, September and November.

*Secretaries of dermatologic societies are requested to furnish the information necessary for the editor to make this list complete and to keep it up to date.

SOUTHERN MEDICAL ASSOCIATION, SECTION ON DERMATOLOGY AND SYPHILOLOGY

Harry M. Robinson, Chairman, 106 E. Chase St., Baltimore, Md.
Winston U. Rutledge, Secretary, 332 W. Broadway, Louisville, Ky.
Place: New Orleans. Time: Nov. 30-Dec. 1-3, 1937.

STATE DERMATOLOGIC SOCIETIES

CALIFORNIA MEDICAL ASSOCIATION, SCIENTIFIC ASSEMBLY, DERMATOLOGY AND SYPHILOLOGY SECTION

Thomas J. Clark, Chairman, 400, 29th St., Oakland.
George V. Kulchar, Secretary, 450 Sutter St., San Francisco.

CONNECTICUT STATE MEDICAL SOCIETY, SECTION ON DERMATOLOGY

Maurice J. Strauss, Chairman, 41 Trumbull St., New Haven, Conn.
Edward A. Abbey, Secretary, 442 Temple St., New York.

FLORIDA SOCIETY OF DERMATOLOGY AND SYPHILOLOGY

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Rudolf Jacoby, Secretary, 270 Commonwealth Ave., Boston.

MEDICAL SOCIETY OF THE STATE OF NEW YORK, SECTION ON DERMATOLOGY AND SYPHILOLOGY

Albert R. McFarland, Chairman, 227 Alexander St., Rochester.
Harry C. Saunders, Secretary, 161 W. 87th St., New York.
Place: Rochester. Time: May 25-26, 1937.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA SECTION ON DERMATOLOGY

Abraham Strauss, Chairman, Medical Arts Bldg., Philadelphia.
L. G. Bembauer, Secretary, 5026 Jenkins Arcade Bldg., Pittsburgh.

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G. Warren Hyde, Chairman, 2501 W. Grand Blvd., Detroit.
Ruth Herrick, Secretary, 26 Sheldon Ave., Grand Rapids.

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John Madden, President, 350 St. Peter St., St. Paul.
F. W. Lynch, Secretary-Treasurer, Lowry Medical Arts Bldg., St. Paul.
Time: First Friday in October, December, February and April.

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Charles P. Bondurant, President, 412 Medical Arts Bldg., Oklahoma City.
Darrell G. Duncan, Secretary, 914 Medical Arts Bldg., Oklahoma City.

TEXAS DERMATOLOGICAL SOCIETY

C. M. Griswold, President, 1215 Walker Ave., Houston.
Everett R. Seale, Secretary, 1215 Walker Ave., Houston.

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Baltimore-Washington Dermatological Society

Leon Ginsburg, President, The Walbert, Baltimore.
Francis A. Ellis, Secretary, 104 W. Madison St., Baltimore.

Bronx Dermatological Society

Theodore Rosenthal, Chairman, 115 W. 86th St., New York.
Henry Silver, Secretary, 290 West End Ave., New York.

Brooklyn Dermatological Society

George F. Price, President, 884 Lincoln Pl., Brooklyn.
Mortimer J. Cantor, Secretary, 907 St. Marks Ave., Brooklyn.
Time: Third Monday of each month except June, July, August and September.

Buffalo-Rochester Dermatological Society

I. J. Arnsson, President, 468 Delaware Ave., Buffalo.
Richard L. Saunders, Secretary, 333 Linwood Ave., Buffalo.

Central New York Dermatological Society

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Los Angeles Dermatological Society

Thomas W. Nisbet, President, 65 N. Madison Ave., Pasadena, Calif.
C. R. Caskey, Secretary, 1930 Wilshire Blvd., Los Angeles.
Time: Second Tuesday of each month, October to May, inclusive.

Manhattan Dermatologic Society

Isidore Rosen, Chairman, 106 E. 54th St., New York.
Mihran B. Parounagian, Secretary, 126 E. 39th St., New York.

Montreal Dermatological Society

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William P. Boardman, President, 388 Marlborough St., Boston.
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J. Gardner Hopkins, Chairman, 102 E. 78th St., New York.
David Bloom, Secretary, 135 E. 50th St., New York.

New York Dermatological Society

Eugene F. Traub, President, 140 E. 54th St., New York.
Frank C. Combes, Secretary, 80 W. 40th St., New York.

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Leonard J. Owen, Secretary-Treasurer, 957 Stuart Bldg., Omaha.

Philadelphia Dermatological Society

Vaughn C. Garner, Chairman, Germantown Professional Bldg., Philadelphia.
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Abraham Fisher, Secretary, 530½ Fifth Ave., McKeesport, Pa.

St. Louis Dermatological Society

A. H. Conrad, President, 3720 Washington Blvd., St. Louis.
Roy L. Kile, Secretary-Treasurer, 3720 Washington Blvd., St. Louis.
Place: Barnard Free Skin and Cancer Hospital. Time: Second Wednesday of each month.

San Francisco Dermatological Society

L. R. Taussig, President, 384 Post St., San Francisco.
John M. Graves, Secretary, 909 Hyde St., San Francisco.

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